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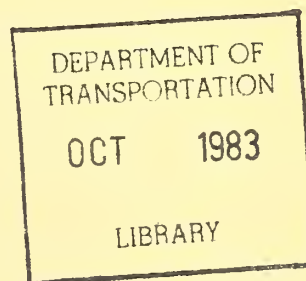
U.S. Department
of Transportation

**Urban Mass
Transportation
Administration**

UMTA-MA-06-0049-83-3
DOT-TSC-UMTA-83-28

Analysis of Commuter Rail Costs and Cost Allocation Methods

**Final Report
July 1983**



UMTA Technical Assistance Program
Office of Service and Management Demonstration
UMTA/TSC Project Evaluation Series

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Technical Report Documentation Page

1. Report No. UMTA-MA-06-0049-83-3		2. Government Accession No.		3. Recipient's Catalog No.	
4. Title and Subtitle ANALYSIS OF COMMUTER RAIL COSTS AND COST ALLOCATION METHODS				5. Report Date July 1983	
				6. Performing Organization Code DTS-64	
7. Author(s) Daniel L. Dornan				8. Performing Organization Report No. DOT-TSC-UMTA-83-28	
9. Performing Organization Name and Address Peat, Marwick, Mitchell & Co.* 1990 K Street, N.W. Washington, DC 20006				10. Work Unit No. (TRAIS) UM327/R3688	
				11. Contract or Grant No. DOT-TSC-1758-13	
12. Sponsoring Agency Name and Address U.S. Department of Transportation Urban Mass Transportation Administration Office of Technical Assistance Office of Service and Management Demonstration Washington DC 20590				13. Type of Report and Period Covered Final Report Jan. 1980-June 1982	
				14. Sponsoring Agency Code URT-30	
15. Supplementary Notes *Under contract to: U.S. Department of Transportation Research and Special Programs Administration Transportation Systems Center Cambridge MA 02142					
16. Abstract <p>The report addresses the issues of commuter rail service costs and the compensation methods used to allocate railroad expenses to the commuter service function. The report consists of six sections. Section 1 describes the study purpose, scope, methodology, and assumptions. Section 2 details the cost structure of rail services as reported by all major railroads to the Interstate Commerce Commission and the primary factors influencing these cost categories for commuter rail operators. Section 3 describes the primary methods of allocating the costs of railroad operations between freight and commuter services. Section 4 presents case study analyses of seven selected commuter rail systems operating in the United States. Each system is described briefly in terms of route structure, service characteristics, labor arrangements, operating statistics, operating revenues and costs, and expense compensation methods. This information provides a quantitative basis for Section 5, which compares the cost effectiveness of these seven commuter rail systems and assesses the cost allocation methods used. Section 6 presents the report's findings and conclusions.</p>					
17. Key Words Commuter Rail Costs, Commuter Rail Cost Allocation Needs			18. Distribution Statement DOCUMENT IS AVAILABLE THROUGH SUPERINTENDENT OF DOCUMENTS U.S. GOVERNMENT PRINTING OFFICE WASHINGTON DC 20402		
19. Security Classif. (of this report) UNCLASSIFIED		20. Security Classif. (of this page) UNCLASSIFIED		21. No. of Pages 142	
				22. Price	

METRIC CONVERSION FACTORS

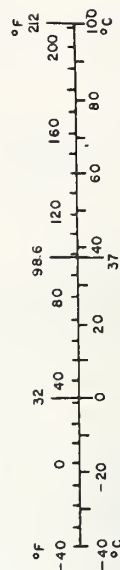
Approximate Conversions to Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
in	inches	2.5	centimeters	cm
ft	feet	30	centimeters	cm
yd	yards	0.9	meters	m
mi	miles	1.6	kilometers	km
AREA				
in ²	square inches	6.5	square centimeters	cm ²
ft ²	square feet	0.09	square meters	m ²
yd ²	square yards	0.8	square meters	m ²
mi ²	square miles	2.6	square kilometers	km ²
	acres	0.4	hectares	ha
MASS (weight)				
oz	ounces	28	grams	g
lb	pounds	0.45	kilograms	kg
	short tons (2000 lb)	0.9	tonnes	t
VOLUME				
tsp	teaspoons	5	milliliters	ml
Tbsp	tablespoons	15	milliliters	ml
fl oz	fluid ounces	30	milliliters	ml
c	cups	0.24	liters	l
pt	pints	0.47	liters	l
qt	quarts	0.95	liters	l
gal	gallons	3.8	liters	l
ft ³	cubic feet	0.03	cubic meters	m ³
yd ³	cubic yards	0.76	cubic meters	m ³
TEMPERATURE (exact)				
°F	Fahrenheit temperature	5/9 (after subtracting 32)	Celsius temperature	°C

*1 in = 2.54 (exact). For other exact conversions and more detailed tables, see NBS Misc. Publ. 286, Units of Weights and Measures, Price \$2.25, SD Catalog No. C13.10/286.

Approximate Conversions from Metric Measures

Symbol	When You Know	Multiply by	To Find	Symbol
LENGTH				
mm	millimeters	0.04	inches	in
cm	centimeters	0.4	inches	in
m	meters	3.3	feet	ft
m	meters	1.1	yards	yd
km	kilometers	0.6	miles	mi
AREA				
cm ²	square centimeters	0.16	square inches	in ²
m ²	square meters	1.2	square yards	yd ²
km ²	square kilometers	0.4	square miles	mi ²
ha	hectares (10,000 m ²)	2.5	acres	
MASS (weight)				
g	grams	0.035	ounces	oz
kg	kilograms	2.2	pounds	lb
t	tonnes (1000 kg)	1.1	short tons	
VOLUME				
ml	milliliters	0.03	fluid ounces	fl oz
l	liters	2.1	pints	pt
l	liters	1.06	quarts	qt
l	liters	0.26	gallons	gal
m ³	cubic meters	35	cubic feet	ft ³
m ³	cubic meters	1.3	cubic yards	yd ³
TEMPERATURE (exact)				
°C	Celsius temperature	9/5 (then add 32)	Fahrenheit temperature	°F



PREFACE

This document was prepared by Peat, Marwick, Mitchell & Co., under Task Directive DOT-TSC-1758-13, as part of the Service and Management Demonstration (SMD) Program sponsored by the Office of Transportation Management and Administration of the Urban Mass Transportation Administration (UMTA). It represents a study of commuter rail costs, factors which influence these costs, and various cost allocation methods for assigning railroad operating costs to commuter rail services. The study includes seven commuter rail system case studies which focus on their operations, costs, and compensation arrangements. This report is based on 1980 cost and operating statistics for each commuter rail system which the operating railroads filed with the Interstate Commerce Commission, and on 1982 system characteristics and operating agreements.

The principal author of the report was Daniel Dornan, Peat Marwick project manager. Mark Hallenbeck and Christopher Randall provided technical assistance in developing and analyzing the case study data, and Raymond Ellis provided overall project guidance and review.

Peat Marwick acknowledges and thanks the following organizations and individuals for their cooperation and support throughout the study:

- . Boston and Maine Railroad: John Higgins, Robert Rice, and James Stoetzel.
- . Baltimore and Ohio Railroad: Jack Griffen and Arthur Eszel.
- . Beaver County Transit Authority: Bruce Ahern.
- . California Department of Transportation: Cecil Smith.
- . Grand Trunk Western Railroad: Robert Gould.
- . Interstate Commerce Commission: James Wells and Luther Hall.
- . Long Island Rail Road: Donald Eisele and Steven Drayzen.
- . Massachusetts Bay Transportation Authority: Patrick Jordon and Charles England.
- . Maryland Department of Transportation: Joseph Nessel and James Emery.

- . Metropolitan Transportation Authority (New York):
Margaret O'Donovan.
- . Pittsburgh and Lake Erie Railroad: Henry Nagel and
William Ferris.
- . Port Authority of Allegheny County: Henry Cusack
and William Mattock.
- . Pennsylvania Department of Transportation: William
Underwood and John Dockendorf.
- . Southeastern Michigan Transportation Authority:
Julien Wolfe.
- . Southern Pacific Railroad: Mary Gingell.

Valuable suggestions and directions were provided by Carla Heaton, the Transportation Systems Center (TSC) Evaluation Manager. Helpful suggestions for the report were also received from Joseph Goodman, UMTA Project Manager, and Jeffery Mora, also of UMTA.

The author wholeheartedly thanks Joanne Coffin, who edited and managed report production, and the Peat Marwick art, word processing, and production staffs for their assistance.

LIST OF ABBREVIATIONS

AAR	Association of American Railroads
B&M	Boston and Maine Railroad
B&O	Baltimore and Ohio Railroad
BCTA	Beaver County Transit Authority
Caltrans	California Department of Transportation
CFR	Code of Federal Regulations
GMA	General Managers Association
GTW	Grand Trunk Western Railroad
ICC	Interstate Commerce Commission
LI	Long Island Rail Road
MBTA	Massachusetts Bay Transportation Authority
MDOT	Maryland Department of Transportation
MTA	Metropolitan Transportation Authority (New York)
P&LE	Pittsburgh and Lake Erie Railroad
PAT	Port Authority of Allegheny County
PADOT	Pennsylvania Department of Transportation
RDCs	Self-propelled diesel passenger cars
RSPO	Rail Services Planning Office
RTA	Regional Transportation Authority
SEMTA	Southeastern Michigan Transportation Authority
SMD	Service and Management Demonstrations
UMTA	Urban Mass Transportation Administration
USOA	Uniform System of Accounts

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EXECUTIVE SUMMARY

The public transportation industry currently is faced with significant fiscal pressures due to the growing disparity between operating costs and the public sector's contribution to public transportation. As a result of these fiscal pressures, state and local transportation agencies are becoming more interested in techniques for controlling the operating costs of transit services.

Commuter rail services are defined as predominantly rush-hour passenger rail services provided within a metropolitan area connecting the central city to the suburbs and using standard railroad right-of-way and equipment owned by either a railroad or a local transportation agency. Commuter rail services usually require a public contribution of between 50 and 90 percent of total operating expenses. This level of public subsidy is causing certain systems to reduce services or to increase fares as public funds become more scarce.

Another motivation for state and local government attention to the cost of commuter rail services is the growing trend by railroads to dispose of their commuter rail operations by turning them over to the local municipal transportation authority or some third-party operator. Examples of this include:

- . the Conrail commuter operations in Maryland, Philadelphia, New Jersey, New York, and Connecticut, which were authorized by the Northeast Rail Act of 1981 to be turned over either to the local transportation authority, Amtrak, or the newly established Commuter Services Corporation by January 1, 1983;
- . the former Rock Island Railroad's commuter operations into Chicago, which have been taken over by the Regional Transportation Authority (RTA); and
- . the Milwaukee Railroad's commuter operations into Chicago, which have been taken over by the RTA.

As more regional transportation agencies begin to operate as well as support commuter rail services, they will develop greater interest in the costs and cost allocation methods associated with the commuter rail industry.

The Service and Management Demonstrations (SMD) Program of the Urban Mass Transportation Administration (UMTA) is responsible for developing, introducing, and disseminating techniques for efficient and effective urban transportation operations and

management. To satisfy this objective, the SMD Program sponsored this study to:

- . analyze the components of commuter rail cost for a sample of commuter rail operations and provide a comparative breakdown of the major operating cost categories for each commuter rail service; and
- . evaluate the cost allocation methods employed by each of the railroads to apportion costs between freight and passenger operations.

This report is designed to provide general guidance to transit agencies concerning commuter rail service costs and cost allocation strategies. The study investigates the cost structure of railroad services (including commuter rail services) as reported by all major railroads to the Interstate Commerce Commission, and the primary factors influencing these cost categories for commuter rail operators. The study also investigates the primary methods of allocating the cost of railroad operations between freight and commuter services. Seven commuter rail systems are analyzed to identify the major characteristics affecting commuter rail service costs and the compensation arrangements contained in the various operating agreements. The seven commuter systems and their contracting agencies included in the study are listed in Table A:

TABLE A. CASE STUDY COMMUTER RAIL SYSTEMS

<u>Region</u>	<u>Operating Railroad</u>	<u>Contracting Agency</u>
Boston, MA	Boston & Maine	Massachusetts Bay Transportation Authority
Long Island, NY	Long Island	Metropolitan Transportation Authority
Washington, D.C./ Baltimore, MD	Baltimore & Ohio	Maryland Department of Transportation
Pittsburgh, PA	Baltimore & Ohio	Port Authority of Allegheny County
Pittsburgh, PA	Pittsburgh & Lake Erie	Beaver County Transit Authority
Detroit, MI	Grand Trunk Western	Southeastern Michigan Transportation Authority
San Francisco, CA	Southern Pacific	California Department of Transportation

These systems represent a broad cross-section of U.S. commuter rail systems. They embody a variety of labor agreements, cost allocation techniques, locomotive power sources (diesel and electric), and scales of operation.

The following pages summarize the major contents and findings of the study and include a set of the primary tables and figures relating to the seven commuter rail systems studied.

COMMUTER RAIL COST CATEGORIES

The capital costs of commuter rail services consist of two categories of expenses:

- . depreciation; and
- . return on investment.

The nature and applicability of these costs depend on the ownership of the equipment and the private or public nature of the title holder.

The major operating cost categories by which railroads record and report expenses for both freight and passenger services include:

- . maintenance-of-way and structures;
- . maintenance-of-equipment;
- . transportation; and
- . general and administrative costs.

Each of these functional operating cost categories can be broken down into the following generic categories to identify the major factors which influence the level and nature of commuter rail operating costs:

- . labor;
- . fuel and power;
- . materials and supplies; and
- . other.

Labor costs represent the majority of commuter rail operating expenses, comprising from 60 to 65 percent of the cost of

operation. This is primarily due to the level of railroad employee wage rates, the nature of work rules governing railroad work assignments, and the methods of railroad passenger ticketing.

The costs of diesel fuel and electric power used in the propulsion of commuter rail equipment represent about 10 percent of the total operating expenses associated with commuter rail services. Although this is a far smaller percentage than the labor component, fuel and power costs have been increasing at a greater rate than any other railroad cost category.

Materials and supplies constitute the third general category of railroad operating expenses and include such items as office supplies, equipment and track repair supplies, tools, lubricants, and other material needed for daily operations of rail service. Material and supply costs represent about 18 percent of total commuter rail operating expenses.

Other cost categories reflected in the railroads' operating expense reports include:

- . equipment rental fees;
- . purchased services;
- . depreciation;
- . interest;
- . taxes;
- . casualties and insurance; and
- . general expenses.

These costs represent about 10 percent of total commuter rail operating expenses. Responsibility for these other expenses depends on the degree to which the operating railroad or authorizing agency owns or leases the equipment, stations, or right-of-way, and which group is responsible for general expenses associated with administrative functions such as marketing, legal services, public relations, and data processing.

Unit operating costs for the commuter rail industry have risen by about 12 percent per year during much of the past decade, reflecting a similar increase to that experienced by the remaining segments of the transit industry. This compares to

about a 10 percent annual increase in unit operating costs for the railroad industry during the past decade.*

Figure A displays the relative composition of operating costs for commuter rail service in terms of their functional and generic categories, based on the commuter rail systems studied using 1980 data.

COST ALLOCATION METHODS

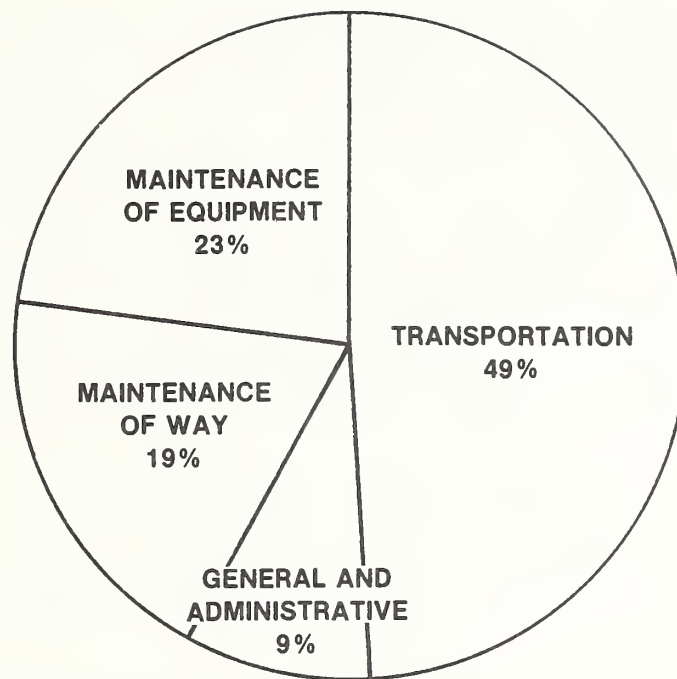
Commuter rail services are typically provided over a railroad right-of-way serving both freight and commuter trains. Because this entails the joint use of equipment, supplies, facilities, and other general overhead services, a methodology is required for allocating costs between freight and commuter services. Such an allocation is important for managing the cost-effectiveness of each service and for establishing the amount of public funding which commuter rail services may be eligible for under various government-sponsored funding programs.

Several methods are available for allocating indirect or common operating costs between freight and commuter rail services. These are:

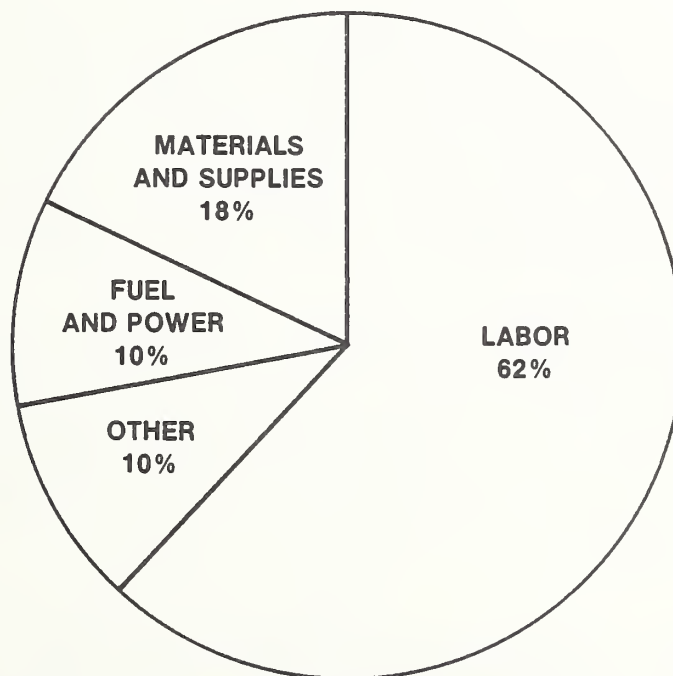
- . variable cost allocation;
- . avoidable cost allocation;
- . attributable cost allocation; and
- . priority of use cost allocation.

Variable cost allocation distributes the cost of a service among its beneficiaries in proportion to their use of the service. This cost allocation technique requires the total costs associated with a service to be divided into variable and fixed cost elements. Variable costs include those expenses which vary in direct proportion to the amount of service provided, as measured by such output statistics as train-miles or passenger-miles. Fixed costs represent those expenses which in the short run do not vary with the amount of service provided. These costs are often allocated to the service beneficiaries in proportion to the variable costs associated with each beneficiary.

* As measured on the basis of total operating costs per vehicle-mile of travel, 1972-1980. Source: American Public Transit Association data and Association of American Railroads data.



FUNCTIONAL CATEGORIES



GENERIC CATEGORIES

FIGURE A. COMMUTER RAIL OPERATING COST COMPONENTS

Avoidable cost allocation assigns to a particular beneficiary only those expenses which could be avoided if the beneficiary were not served. Also known as the separable cost/remaining benefits method, this cost allocation technique separates expenses into those which are incurred solely because of an individual beneficiary and those common costs which are shared among beneficiaries. The primary beneficiary of a service would be assigned the common costs associated with the service which would be incurred without any other beneficiary being served. Only those additional costs which would be incurred by serving secondary beneficiaries are allocated to these other beneficiaries. The primary user thus bears a larger share of the costs in this cost allocation method, relative to the variable cost method.

Avoidable cost allocation is most appropriately used when one beneficiary clearly dominates the use of services. In these cases, the secondary service is actually a marginal operation in terms of usage, and is thus a marginal cost producer.

Attributable cost allocation assigns to a particular beneficiary both the avoidable costs associated with that beneficiary and a proportion of the common or shared costs of the service. These common costs are partially borne by all beneficiaries being served. Their allocation among the beneficiaries can be made on the basis of the proportion of avoidable costs associated with each beneficiary, or some common base unit like train-miles, passenger-miles, or direct labor expenses. The basic distinction between avoidable cost allocation and attributable cost allocation is that the latter includes elements of common costs which are shared among the beneficiaries. Attributable costs are usually not defined as easily or applied as simply as avoidable costs, due to the difficulty in determining what proportion of nondirect expenses should be allocated to a beneficiary and what base units will acceptably allocate those costs.

Priority of use cost allocation determines the common costs of serving the various beneficiaries and allocates these costs in relative proportion to the priority given to each beneficiary. The basis for this priority can be either the level of service provided or the importance of the beneficiary served. This method is a variation of the avoidable and attributable cost allocation methods, with the cost allocations to each function being weighted by their relative priority.

In addition, several approaches used by railroads and authorizing agencies represent variations or combinations of these methods. A primary example of this approach is the cost allocation methodology developed by the Rail Services Planning

Office (RSPO) of the Interstate Commerce Commission, entitled Standards For Determining Commuter Rail Service Continuation Subsidies (CFR 1127). These standards prescribe the methodology to be used by railroads in estimating the required subsidy for providing commuter rail services based upon the attributable revenues, avoidable costs, and reasonable return on value for such services.

According to this methodology, both direct and common costs may be assigned on the basis of agreed-to facilities and personnel utilization plans which specify:

- . the dominant and secondary users (i.e., priority of use cost allocation);
- . variable operating and user statistics (i.e., variable cost allocation);
- . actual costs incurred (i.e., avoidable cost allocation); and
- . the prior allocation of direct cost accounts (i.e., attributable cost allocation).

The RSPO methodology for estimating the revenue and cost values may be changed, provided the negotiating parties agree to the changes.

More than one method of cost allocation can be stipulated in a commuter rail service contract. This usually occurs when the parties involved decide that no one approach is suitable for properly assigning all categories of expenses, due to the nature of the cost items, the predominance of one type of service, or the availability of data upon which to base the cost allocation. Since each commuter rail system is unique, the choice of cost allocation techniques by an individual system will depend on the nature of that system, its operations, its ridership levels, and its ownership. The effect of different cost allocation techniques will depend on the proportion of noncommuter rail services using the railroad right-of-way; the ownership of equipment, right-of-way, and stations involved in commuter rail services; and the degree to which the operating railroad can distinguish its costs by type of service.

COMMUTER RAIL SYSTEMS CASE STUDIES

The full report includes descriptions of the route structure, operating characteristics, ridership levels, principal labor rules, major cost categories, and compensation methods associated with the seven commuter rail systems considered

by this study. Also included are comparative analyses of the seven commuter rail systems and their respective operating agreements.

Figures B, C, and D summarize the unit rideship, operating, revenue, and cost statistics for 1980 for each of the seven commuter rail systems studied. These figures illustrate the high degree of variability among the seven systems studied, which primarily reflect differences in labor agreements, system size, ridership levels, and equipment utilization. The operating cost statistics shown in Figure D are based on a consistent allocation of costs, as reported by each operating railroad to the Interstate Commerce Commission. The actual costs charged to the authorizing agencies may differ significantly from these totals, depending on the terms of the operating agreements between the authorizing agencies and the operating railroads associated with each system.

Table B describes the major characteristics of the current operating agreements for each of the case study commuter rail systems. Based on the seven operating agreements, the avoidable cost allocation method tends to be preferred when freight services are the predominant user of the right-of-way, while the attributable cost allocation method is preferred when commuter services are significant users of the right-of-way.

FINDINGS

The findings of this study indicate that the cost to public agencies of funding commuter rail service varies significantly among rail systems. These variations can be attributed to:

- . the differences in railroad labor agreements currently in effect;
- . the scale of train operations and ridership demand;
- . the age, condition, and capacity of equipment;
- . the ownership of right-of-way and equipment; and
- . the methods used to allocate common costs as stipulated in the operating agreements between railroad and authorizing agency.

Controlling these costs will depend on developing an understanding of the characteristics of the system being operated and implementing appropriate productivity enhancing strategies. Innovative operating agreements are being used to help control the cost of commuter rail services to public agencies and to

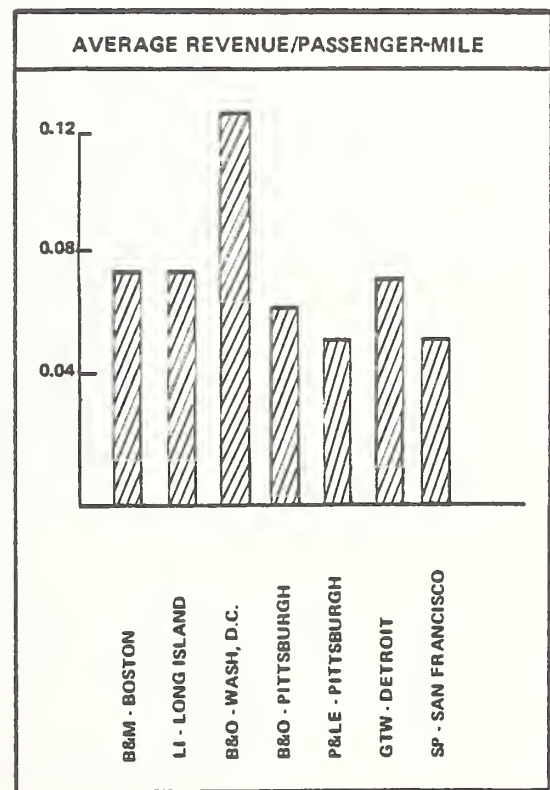
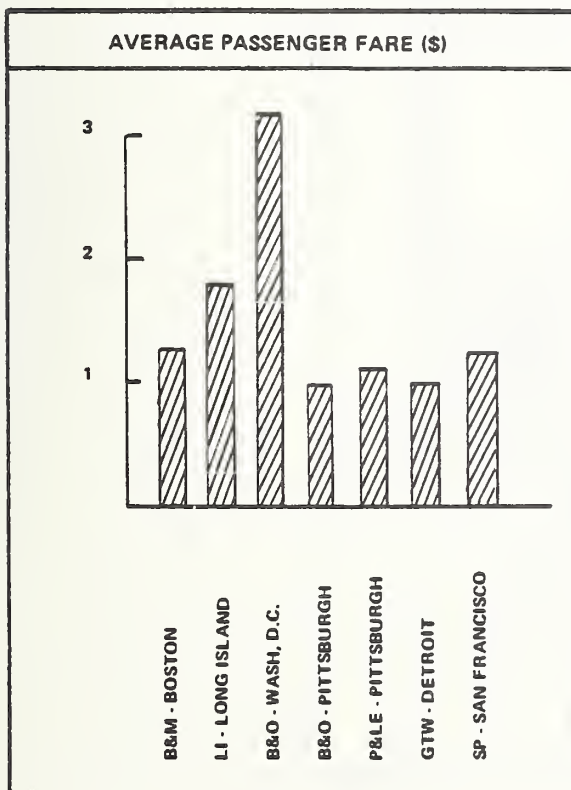
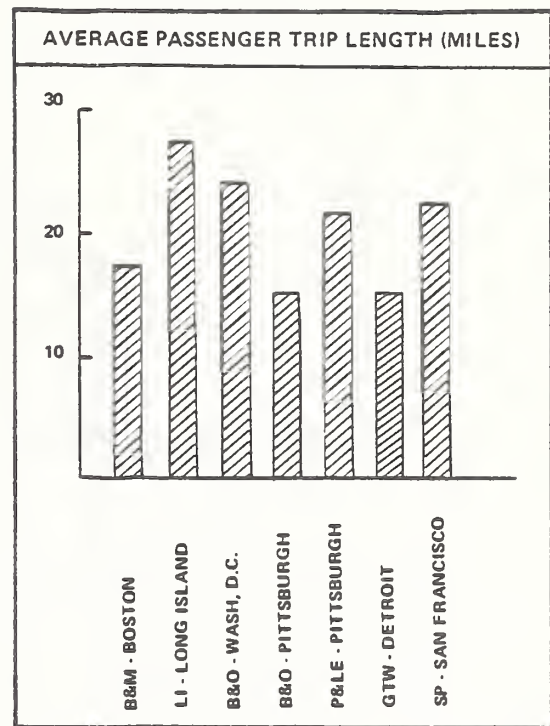
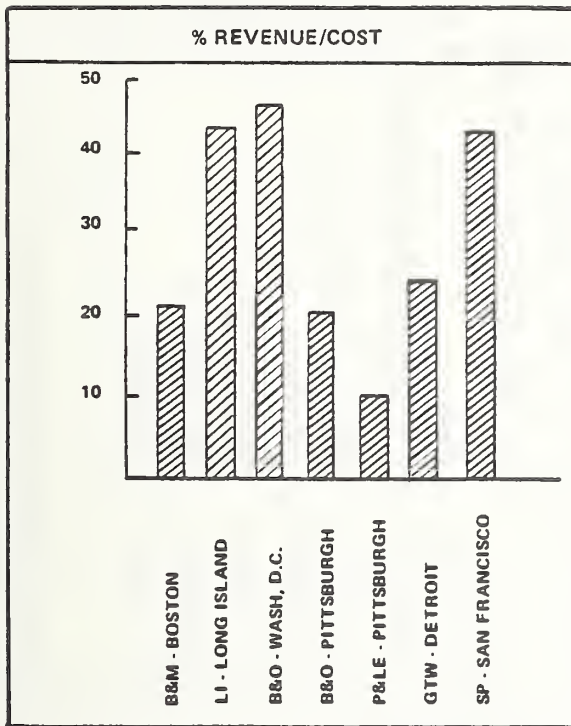


FIGURE B. COMPARISON OF RIDERSHIP AND OPERATING CHARACTERISTICS BY SYSTEM, 1980.

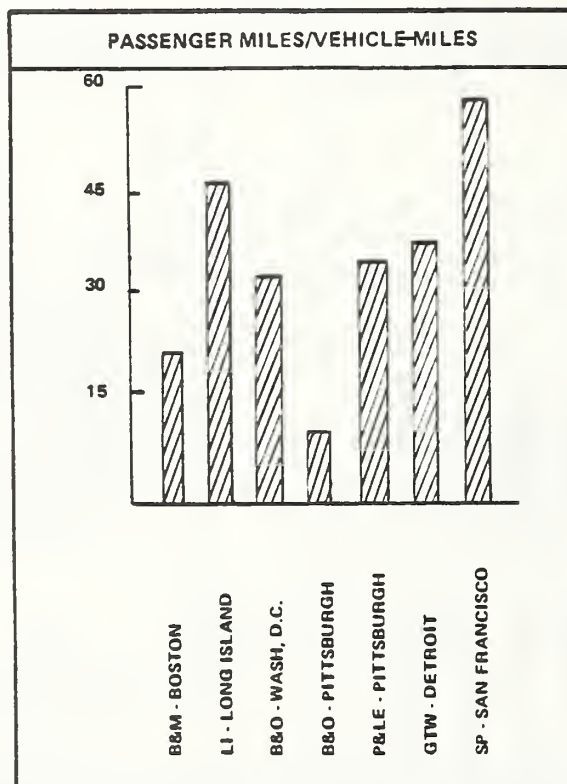
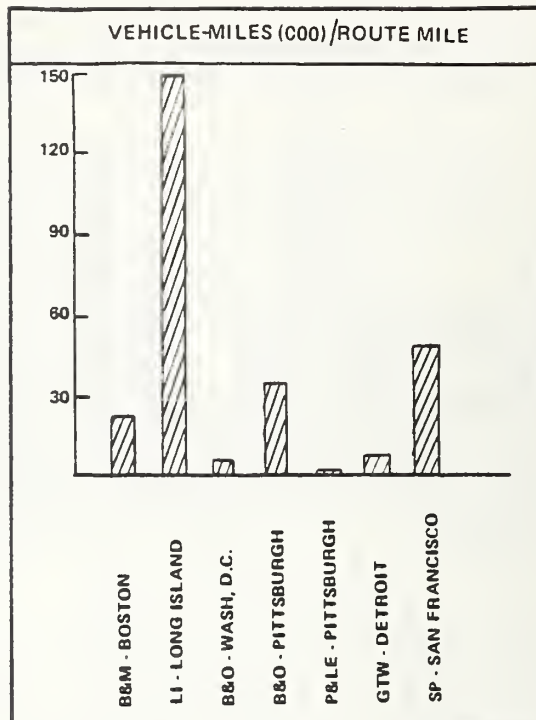
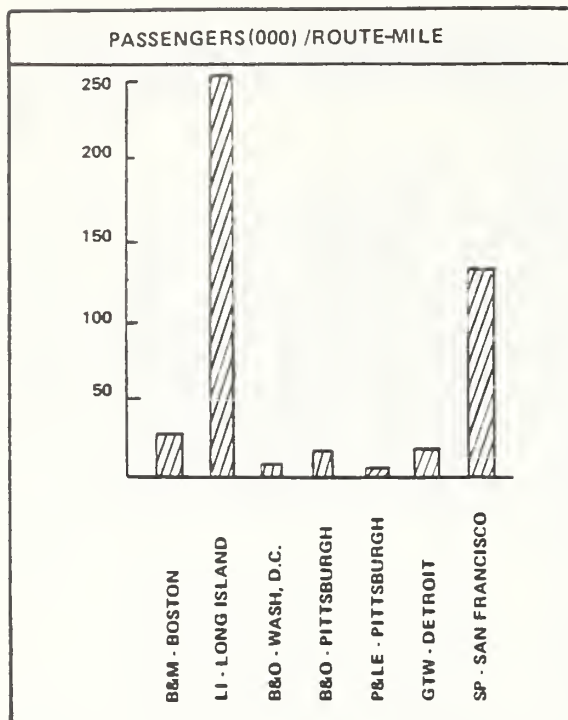


FIGURE C. COMPARISON OF RIDERSHIP AND OPERATING CHARACTERISTICS BY SYSTEM, 1980.

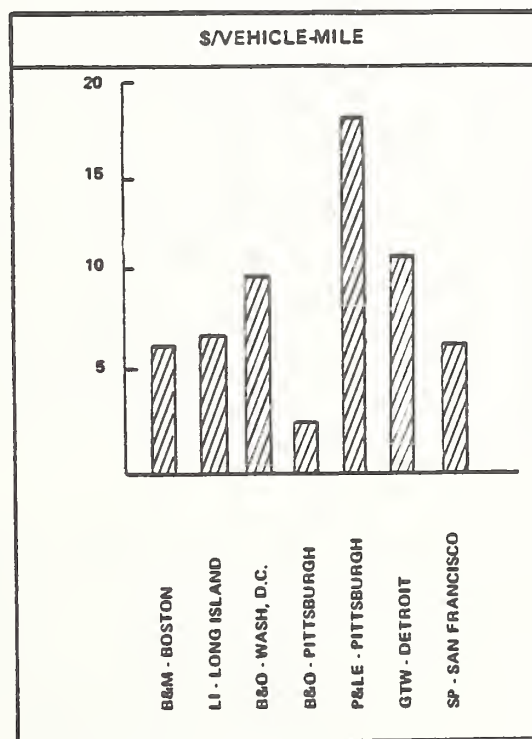
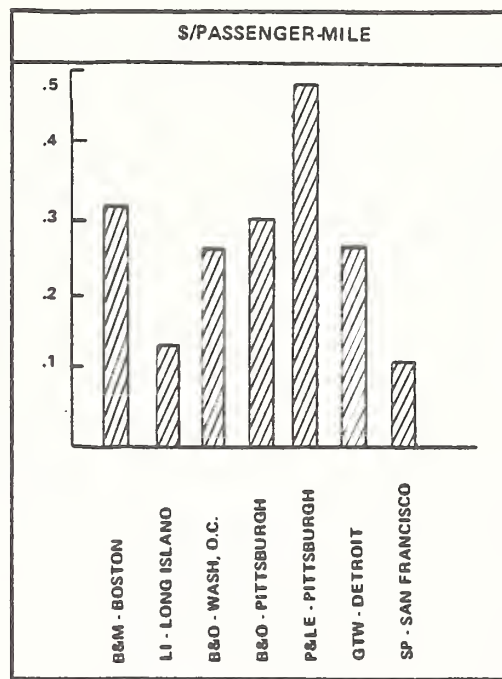
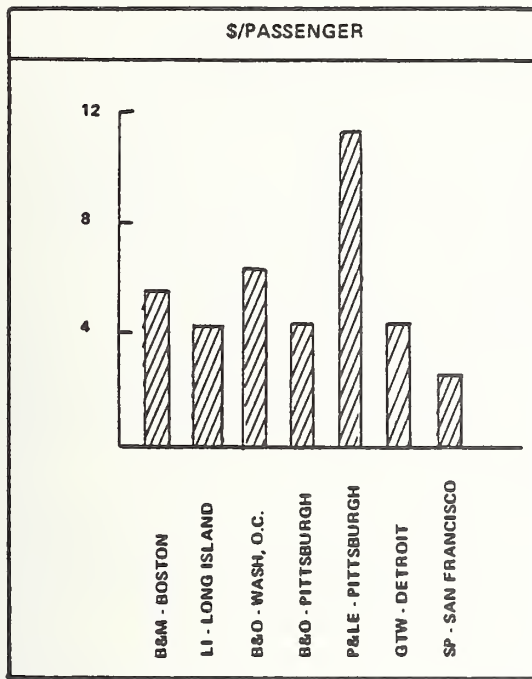


FIGURE D. COMPARISON OF AVERAGE UNIT TOTAL OPERATING COSTS BY SYSTEM, 1980.

TABLE B. COST ALLOCATION METHODS BY SYSTEM.

System	Primary Compensation Methods
B&M/Boston	<ul style="list-style-type: none"> - Attributable Cost Allocation - Fixed Percent General and Administrative Overhead - Fixed Management Fee and Liability Fund - Service Performance Incentives and Offsets - Ridership Level Incentives
LI/Long Island	<ul style="list-style-type: none"> - RSPC Cost Allocation (primarily attributable cost allocation)
B&O/Washington, D.C.	<ul style="list-style-type: none"> - Avoidable Cost Allocation - Fixed General and Administrative Fee
B&O/Pittsburgh	<ul style="list-style-type: none"> - Avoidable Cost Allocation - GMA* Overhead Rates for General and Administrative Costs - Service Performance Penalties - Equipment Maintenance Penalties
P&LE/Pittsburgh	<ul style="list-style-type: none"> - Avoidable Cost Allocation - Fixed Percent Supervisor Overhead
GTW/Detroit	<ul style="list-style-type: none"> - Variable Cost Allocation - GMA* Overhead Rates for General and Administrative Costs - Fixed Liability Fee and Station Use Charge
SP/San Francisco	<ul style="list-style-type: none"> - Attributable Cost Allocation - Fixed Percent General and Administrative Costs - Fixed Percent Common Costs - Fixed Percent Management Fee - Ridership Level Incentives - Fixed Maintenance-of-Way Fee - Below Value Equipment and Station Rental Costs - Fixed Liability Fee

* GMA - General Managers Association

ensure a high level of service quality. Other management, operating, and marketing techniques are also being applied which are designed to reduce the cost burden of commuter rail services. By focusing on the operations, costs, and operating agreements of seven commuter rail systems, this study provides transit agencies a comparative basis for assessing their own systems.

1. INTRODUCTION

The public transportation industry currently is faced with significant fiscal pressures due to the growing disparity between operating costs and the public sector's contribution to public transportation. As a result of these fiscal pressures, state and local transportation agencies are becoming more interested in techniques for controlling the operating costs of transit services.

Commuter rail services are defined as predominantly rush-hour passenger rail services provided within a metropolitan area connecting the central city to the suburbs and using standard railroad right-of-way and equipment owned by either a railroad or a local transportation agency. Commuter rail services usually require a public contribution of between 50 and 90 percent of total operating expenses. This level of community subsidy is causing certain systems to reduce services or increase fares as public funds become more scarce.

Another motivation for state and local government attention to the cost of commuter rail services is the growing trend by railroads to dispose of their commuter rail operations by turning them over to the local municipal transportation authority or some third-party operator. Examples of this include:

- . the Conrail commuter operations in Maryland, Philadelphia, New Jersey, New York, and Connecticut, which were authorized by the Northeast Rail Act of 1981 to be turned over either to the local transportation authority, Amtrak, or the newly established Commuter Services Corporation by January 1, 1983;
- . the former Rock Island Railroad's commuter operations into Chicago, which have been taken over by the Regional Transportation Authority (RTA); and
- . the Milwaukee Railroad's commuter operations into Chicago, which have been taken over by the RTA.

As more regional transportation agencies begin to operate as well as support commuter rail services, they will develop greater interest in the costs and cost allocation methods associated with the commuter rail industry.

1.1 PURPOSE OF THE REPORT

The Service and Management Demonstrations (SMD) Program of the Urban Mass Transportation Administration (UMTA) is responsible for developing, introducing, and disseminating techniques for efficient and effective transit operations and management. To satisfy this objective, the SMD Program sponsored this study to:

- . analyze the components of commuter rail cost for a sample of commuter rail operations and provide a comparative breakdown of the major operating cost categories for each commuter rail service; and
- . evaluate the cost allocation methods employed by each of the railroads to apportion costs between freight and passenger operations.

The results of this analysis and evaluation are presented in this report.

1.2 SCOPE OF THE REPORT

This report is designed to provide general guidance to transit agencies concerning commuter rail service costs and cost allocation strategies. The study investigates the cost structure of railroad services (including commuter rail services) as reported by all major railroads to the Interstate Commerce Commission (ICC) and the primary factors influencing these cost categories for commuter rail operators. The study also investigates the primary methods of allocating the cost of railroad operations between freight and commuter services. Seven commuter rail systems are analyzed, to identify the major characteristics affecting commuter rail service costs and the compensation arrangements contained in the various operating agreements. The seven commuter systems and their contracting agencies included in the study are listed in Table 1.

TABLE 1. CASE STUDY COMMUTER RAIL SYSTEMS

<u>Region</u>	<u>Operating Railroad</u>	<u>Contracting Agency</u>
Boston, MA	Boston & Maine	Massachusetts Bay Transportation Authority
Long Island, NY	Long Island	Metropolitan Transportation Authority
Washington, D.C./ Baltimore, MD	Baltimore & Ohio	Maryland Department of Transportation
Pittsburgh, PA	Baltimore & Ohio	Port Authority of Allegheny County
Pittsburgh, PA	Pittsburgh & Lake Erie	Beaver County Transit Authority
Detroit, MI	Grand Trunk Western	Southeastern Michigan Transportation Authority
San Francisco, CA	Southern Pacific	California Department of Transportation

These systems represent a broad cross-section of U.S. commuter rail systems. They embody a variety of labor agreements, cost allocation techniques, locomotive power sources (electric versus diesel), and scales of operation.

The analysis of the cost categories of each commuter rail system is based on 1980 data filed by the operating railroads with the ICC in their Annual Report Form R-1. Operating statistics for the same timeframe are based on the OS-A and OS-B reports of the railroads, which are also filed with the ICC. The 1980 timeframe represents the last full year in which each of these reports were required by the ICC. Information not available from these reports is based on data obtained directly from the operating railroads or authorizing agencies. None of this information has been independently verified by the authors.

The current status of each commuter rail system is based on discussions with the operating railroads and authorizing agencies. Information derived from these discussions includes the current scope and level of service, operating schedule, equipment composition and ownership, ridership, crew levels and labor arrangements, and contract agreements specifying the basis for operating cost reimbursement. This information reveals significant changes that have occurred in the service or contract provisions of the individual commuter rail systems since 1980 and provides added insights into the compensation structure of each system.

1.3 METHODOLOGY

The methodology for this study involved contacting, by telephone and letter, several railroads providing commuter services and the public agencies contracting for these services. The cost and operating information collected from this correspondence and other available public sources was used in the comparative analysis of commuter rail systems. For this purpose, the major cost categories were organized by certain operating statistics to develop comparable unit costs. The operating statistics used included the annual number of passengers, passenger-miles, and vehicle-miles. In addition, average ridership and operating ratios were calculated, such as the percent fare box revenues to total operating costs, average passenger fare, average trip length, average passenger loading per vehicle, and average service frequency. These units of output provided meaningful bases of comparison among the seven systems studied.

The unit costs of operations were developed for this study based on 1980 cost and operating data. Because the timeframe is a single year, special circumstances such as a major track rehabilitation program, labor strike, or equipment acquisition could result in unit costs that do not reflect the long-term average costs for that system.

This report also investigated the current services and operating agreements between the railroads and contracting agencies. Of particular note were the cost allocation methods used by the railroads in billing the contracting agency for commuter rail services. This information was listed by system and compared to highlight the differences in the cost levels incurred by the railroads and the compensation methods permitted by the service contracts. By recognizing the differences in costs, it was also possible to demonstrate the effect of various labor, equipment ownership, service level, and operating arrangements on the efficiency with which commuter rail services were provided.

1.4 OVERVIEW OF THE REPORT

The remainder of this report is organized into five sections which address the following areas:

- . Section 2 describes the major categories used by railroads to report operating expenses for commuter

rail services. It also discusses several major factors which significantly influence the costs of commuter rail operations.

- . Section 3 describes the major cost allocation methods available for assigning railroad operating expenses to freight and commuter services.
- . Section 4 describes the system, service, ridership, cost, and operating characteristics of the seven commuter rail systems studied. Each case study includes a system map, a summary of system cost and operating characteristics, and a description of the cost allocation methods prescribed by current operating agreements.
- . Section 5 provides a comparative analysis of the seven commuter rail systems studied, which highlights the differences in the level of operations, labor arrangements, route structure, ridership density, and compensation methods as they affect the costs charged to the contracting agencies.
- . Section 6 presents the major findings and conclusions resulting from this study. These are intended to assist metropolitan transportation agencies who are considering initiating or revising commuter rail service contracts.

2. COMMUTER RAIL CAPITAL AND OPERATING COSTS

This section describes the major capital and operating cost categories by which railroads record and report expenses for both freight and passenger services. An understanding of these costs is essential to our later discussions of cost allocation methodologies.

2.1 COMMUTER RAIL COST CATEGORIES

The categories of capital and operating costs associated with railroad operations are prescribed by reporting requirements established by the Interstate Commerce Commission (ICC). Major railroads in the United States are required by law (CFR 49 U.S.C. 11145) to submit to the ICC an annual report which contains detailed financial and operating information. Railroads having annual operating revenues of \$50 million or more (called Class I railroads) must submit this information in the Annual Report Form R-1. (Appendix A provides a copy of the Form R-1 table of contents.) While the focus of this study is the operating costs relating to commuter rail services, this section also will address briefly the associated capital costs.

2.1.1 Capital Costs

The capital costs of commuter rail service refer to the annualized costs associated with tangible assets utilized in the provision of commuter rail services. Typical capital assets used by commuter rail operators include:

- . equipment:
 - locomotives;
 - coaches; and
 - self-propelled units.
- . road property:
 - track materials;
 - signals and communication equipment; and
 - stations.

Reporting capital costs may result in two categories of expenses: depreciation and return on investment.

Depreciation is an accounting practice whereby a prescribed dollar amount is charged against earnings to reflect the fact that certain capital assets are being used up. The amount of depreciation depends on the asset's book value, estimated service life, net salvage value, and method by which the depreciation allowance is taken (straight-line, sum-of-the-years-digits, double declining balance). Depreciation can have a significant effect on the tax liability of a private company, since the greater the depreciation the lower the level of taxable income. Only the company owning the capital asset can claim the depreciation.

Certain railroads have not depreciated their track-related capital expenses. Instead, they have used a technique called "betterment accounting," in which the costs of track capacity improvements were capitalized and the costs of track repairs were charged entirely to expenses during the year in which they occurred. This accounting technique is being phased out by the ICC, beginning with reports filed for 1983.

Return on investment provides a return to the company based on the value of the capital asset. This return on capital is computed by multiplying the railroad's pre-tax composite cost of capital by the net book value of the relevant capital assets (both equipment and road property). While private companies consider the return on capital a cost of doing business, public agencies which purchase such capital items using public funds for subsidized commuter rail service do not normally recognize this cost.

The treatment of capital costs varies considerably among commuter rail systems. Certain metropolitan transportation agencies have purchased passenger locomotives, cars, and stations, while others lease their equipment and facilities, and still others do a combination of both. The trend seems to be for public agencies to purchase their own locomotives and cars and to contract with the operating railroad to maintain the equipment. This provides the agency with greater control over the type of equipment utilized. When newer equipment is acquired by the public agency, equipment availability can be improved and equipment maintenance costs can be lowered, resulting in improved service quality.

Financing of capital expenses is also varied and includes federal grants, bond issues, and various loans and lease agreements. The wide variety of methods used to acquire and account for capital assets, along with the fact that changes in capital

expenses are not significantly affected by operational decisions short of major service changes, places a comparison of commuter rail system capital costs beyond the scope of this project.

2.1.2 Operating Costs

Schedule 410 of the R-1 report contains a detailed listing of the railroad's operating expenses for the calendar year for which the report is filed. The railroad's operating expenses are classified in accordance with the Uniform System of Accounts for railroad companies. The schedule divides the operating expenses, including labor, materials, and energy costs, into four functional categories.

- . Maintenance-of-way and structures, which consists of 84 separate line items relating to the repair and maintenance of track, signals and communication devices, and buildings and structures.
- . Maintenance-of-equipment, which consists of 58 separate line items relating to the repair and maintenance of locomotives, freight cars, and other equipment (including passenger equipment).
- . Transportation, which consists of 57 separate line items relating to train, yard, train and yard common, specialized service, and administrative support operations. Included are the costs of road crews, yard crews, station staff, train control, and general transportation staff. This category accounts for the energy costs of both train equipment and stations. Transportation is normally the largest of the four categories for commuter rail services. Transportation costs are about 65 percent labor related, 20 percent energy related, 12 percent material related, and 3 percent other costs.
- . General and administrative, which consists of 18 separate line items relating to specialized management support functions such as finance and accounting, data processing, marketing, legal services, and personnel and labor relations.

Appendix B lists the 217 railroad operating expense accounts which make up these four general categories of costs.

Each of these expense categories and line items is subdivided into freight and passenger expenses by first assigning all expenses that are directly attributable to either freight or

passenger services. The remaining operating expenses, which are common to both freight and passenger services, are then allocated to each service in accordance with the ICC's rules governing the separation of such expenses. The next section will discuss these rules in more detail.

For all railroads, with the exception of the Denver and Rio Grand Western Railroad, the "passenger expense" category refers to commuter rail services. Intercity passenger services have for the most part been taken over by Amtrak, the National Railroad Passenger Corporation. The expenses incurred by a railroad in operating Amtrak trains are listed separately on Form R-1 Schedule 419, Renumerations from National Railroad Passenger Corporation, which is in the same format as Schedule 410. Only the Denver and Rio Grand Western Railroad continues to operate its own intercity passenger trains, whose expenses are reflected in Schedule 410 of its Form R-1.

The freight expense category is further subdivided into:

- . salaries and wages;
- . materials, tools, supplies, fuels, and lubricants;
- . purchased services; and
- . general.

No such breakdown of the passenger expense category is required by the ICC in Form R-1.

Unit operating costs for the commuter rail industry in the United States have risen by about 12 percent per year during much of the past decade, reflecting an increase similar to that experienced by the remaining segments of the transit industry. This compares to about a 10 percent annual increase in unit operating costs for the railroad industry during the past decade.* The breakdown of commuter rail operating costs into the four functional categories defined above is illustrated in Figure 1, based on 1980 data for a sample of seven commuter rail systems. This breakdown is comparable to the breakdown of operating costs for the railroad industry as a whole.

* As measured on the basis of total operating cost per vehicle mile of travel, 1972-1980. Source: American Public Transit Association data and Association of American Railroads data.

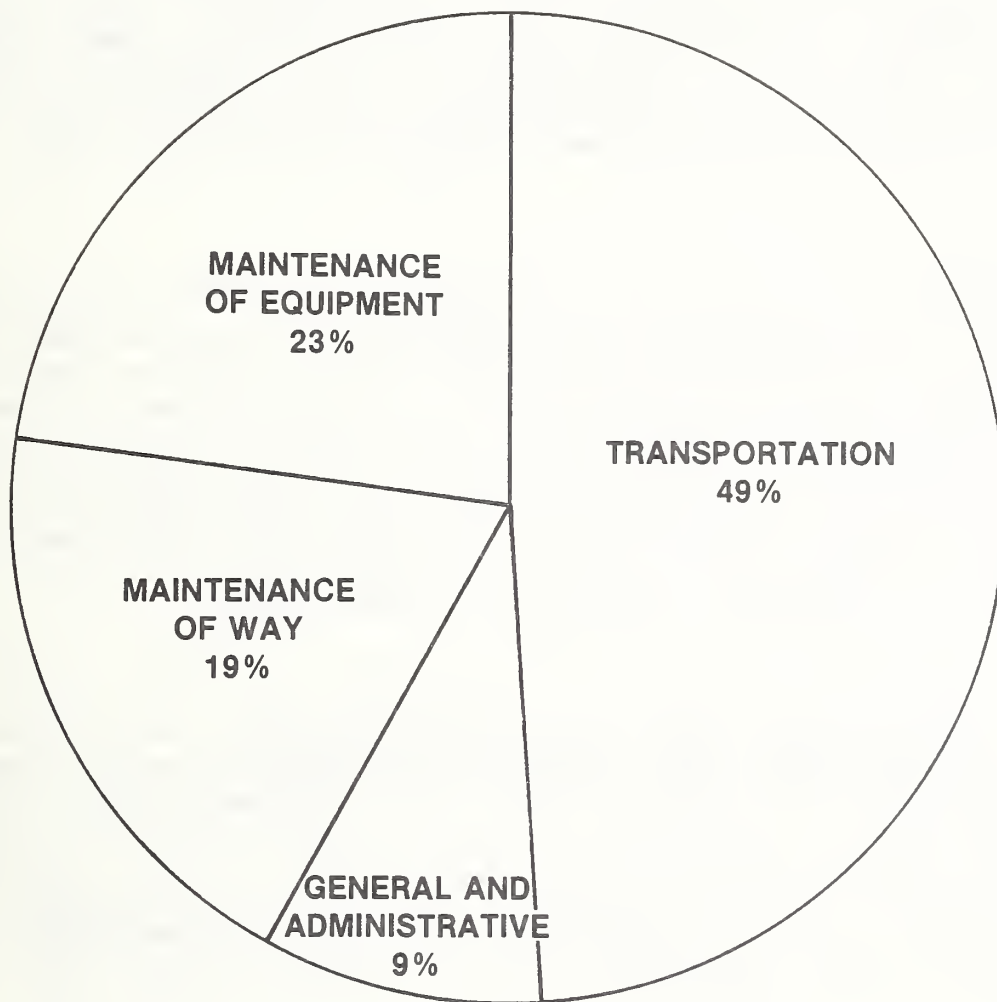


FIGURE 1. FUNCTIONAL BREAKDOWN OF COMMUTER RAIL OPERATING COSTS

Based on 1980 data for seven commuter rail systems.

2.2 FACTORS INFLUENCING COMMUTER RAIL OPERATING COSTS

While railroad costs normally are reported by functional category (transportation, maintenance of way, etc.), it is useful to examine commuter rail costs according to their generic stratification: labor, fuel and power, materials and supplies, and other expenses. An examination of costs within this stratification yields valuable information on the factors which influence the level and nature of commuter rail operating costs.

2.2.1 Labor

Labor costs represent the majority of commuter rail operating expenses, comprising from 60 to 65 percent of the cost of operation.* This is primarily due to the level of railroad employee wage rates, the nature of work rules governing railroad work assignments, and the methods of railroad passenger ticketing. These provisions are derived from long-established practices and habits, from collective bargaining agreements, from decisions of courts and tribunals, and from federal and state legislation. The provisions are discussed below.

2.2.1.1 Wage Levels and Union Representation - The railroad industry compensates its employees at a level which is higher than most other industries. Out of 216 industries, railroads rank fifteenth in terms of average hourly wages. Railroad employees receive higher total compensation than 95.7 percent of the workers in other industries. In addition, railroad labor has received larger increases in wages and total compensation than most other industries in the United States in recent years.**

The higher level of employee compensation in the railroad industry is due in part to the degree to which railroad employees are represented by organized labor. According to recent Department of Labor and Department of Commerce statistics, the

* Northeast Corridor Commuter Rail Authorities Committee Report on Conrail Labor Issues, May 1981, p. 13.

** Harvey Levine, Clifford Eby, Craig Rockey, and John Dale, Small Railroads, Association of American Railroads. (Chelsea, Michigan: Book Crafters, Inc. 1982), p. 108.

railroad industry has the highest union representation of any major U.S. industry, with over 80 percent of all railroad employees belonging to a union. This compares to an average of 26 percent for all U.S. industries.*

Railroad employees are represented by numerous labor unions. Table 2 lists the 14 major unions which represent most railroad employees. These unions use various craft or class lines as the basis for representation, many of which were drawn up in the early part of this century when steam locomotives powered the nation's railroads.

2.2.1.2 Work Rules and Crew Laws - Railroad work rules and crew laws significantly impact commuter rail operating costs, due to their influence on the following:

- . crew sizing;
- . basis of pay for engine and train crews;
- . craft distinctions; and
- . district assignments.

While specific labor agreements can vary significantly among railroads, most commuter rail operations are subject to traditional railroad work rules and crew laws. The practices outlined below are not indicative of all commuter rail operations, but they do represent a sampling of labor arrangements common to many railroads.

- . Personnel Requirement. Crew consist agreements or crewing laws specify the number and classification of train and engine personnel required on a train. These crew consist rules often date back to the early 1900s and typically take no account of current technology, ridership levels, or safety requirements. For example, some commuter trains still carry firemen (sometimes called "engineer's helper"), although this function was largely eliminated with the advent of the diesel locomotive. Only in recent years has the fireman position become essentially an engineer training slot. Another example is the requirement for three-man crews on single-car, off-peak trains of an East Coast commuter operation.

* Ibid.

TABLE 2. MAJOR RAILROAD EMPLOYEE UNIONS.

Employee Classification	BRAC	BMWE	IBEW	IBBB	BRC	IAM	SMW	IBF&O	BRS	HRE	RYA	ATDA	UTU	BLE	14 Unions
Clerks, Station & Tel. Employees	X														
Maintenance of Way Employees		X													
Linemen & Groundmen			X												
Blacksmiths & Boilermakers				X											
Carmen					X										
Electrical Workers			X												
Machinists						X									
Sheet Metal Workers							X								
Skilled Trades Helpers, Helper															
Apprentices & Regular															
Apprentices (ME & Stores)			X		X	X									
Coach Cleaners					X										
Stationary Engine & Boiler															
Room Employees, Shop &								X							
Roundhouse Laborers, Etc.															
Signalmen, Assistants & Helpers,															
Signal Maintainers, Assistants									X						
& Helpers & Gang Foremen										X					
Dining Car Employees															
Yardmasters and Assistants											X				
Train Dispatchers & Asst.															
Chief Dispatchers															
Road Passenger Conductors &															
Assts., Baggage-men, Brake-													X		
men & Firemen & Helpers														X	
Road Passenger Engineers &															
Motormen															
Road Freight Conductors &															
Brakemen															
Road Freight Engineers															
Road Freight Firemen															
Yard Engineers & Motormen															
All Other Yard Service															
Employees															
Total Employees—Year 1979	94,400	71,200	14,000	2,900	44,500	18,300	5,000	9,300	10,800	500	5,000	2,600	112,900	34,200	425,600
Percent of Total Employees	22.2	16.7	3.3	0.7	10.5	4.3	1.2	2.2	2.5	0.1	1.2	0.6	26.5	8.0	100.0

Legend:
 BRAC — Brotherhood of Railway, Airline and Steamship Clerks, Freight Handlers, Express and Station Employees
 BMWE — Brotherhood of Maintenance of Way Employees
 IBEW — International Brotherhood of Electrical Workers
 IBBB — International Brotherhood of Boilermakers, Iron Ship Builders, Blacksmiths, Forgers and Helpers
 BRC — Brotherhood of Railway Carmen of United States and Canada
 IAM — International Association of Machinists and Aerospace Workers
 SMW — Sheet Metal Workers' International Association
 IBF&O — International Brotherhood of Firemen and Oilers
 BRS — Brotherhood of Railroad Signalmen
 HRE — Hotel and Restaurant Employees and Bartenders' International Union
 RYA — Railroad Yardmasters of America
 ATDA — American Train Dispatchers' Association
 UTU — United Transportation Union
 BLE — Brotherhood of Locomotive Engineers
 (Marine employees belong to various marine unions not listed above.)
 Source: National Railway Labor Conference

NOTE: Reprinted, by permission, from Small Railroads, Harvey Levine, Clifford Eby, Craig Rockey, and John Dale (Chelsea, Michigan: Book Crafters, Inc. 1982), p. 115. © 1982 by Association of American Railroads.

- . Basis of Pay Provisions. Due to the complex system of work rules used to allocate work among railroad employees and to establish working conditions of employee assignments, a standard day's pay is often based on both a time (8 to 9 hours) and a distance (100 to 150 miles) limit. An employee who exceeds either of these limits is usually entitled to overtime pay (sometimes as much as a second day's pay). Additionally, a crew's daily work hours are limited to 12 hours.

Crew members may also receive wage guarantees, on a daily, weekly, or monthly basis, regardless of the number of hours actually worked. Such guarantees are often in addition to the overtime paid.

Arbitraries and constructive allowances are additional payments made to employees for special tasks performed outside normal operations. Though not commonplace among commuter rail operations, such allowances may be paid for deadheading equipment, adding or changing motive power, performing brake tests, operating between separate divisions, or performing short turnaround service.

The combined effect of these work rules is that most commuter rail employees are paid significantly more than their platform time would indicate. When compared to transit operating employees, commuter rail employees have a significantly lower ratio of platform hours to pay hours. This fact was documented in a recent study of Conrail's commuter rail operations in New Jersey and Philadelphia. In both cases, the commuter rail platform ratio was about 50 percent, while the ratio for transit operators of the same systems was about 90 percent.*

- . Craft Distinctions. The specific functions and duties of railroad employees are divided along craft lines. These so-called craft distinctions reflect the functional duties originally required during the steam era of railroading, and they largely form the basis for union representation. For the most part,

* Northeast Corridor Commuter Rail Authorities Committee Report on Conrail Labor Issues, May 1981, p. 14.

railroad employees of one craft union are prohibited from performing duties associated with another craft union, unless no one is available to perform the work. For example, road and yard operating crews are usually prohibited from operating a train beyond specified yard limits. The maintenance-of-equipment function is particularly fragmented, with up to six different craft unions being required to accomplish the work that one "composite" mechanic could accomplish. Employee classifications for this function include electricians, sheet metal workers, blacksmiths, pipefitters, boilermakers, and welders. Where an employee of one craft performs the functions of another craft, an arbitrary might be paid to the employee performing the work, or an employee from each craft might be paid for the work performed.

- . District Assignments. Railroad work rules also stipulate the division of work performed by employees of one railroad on the property of another railroad. In addition, road crews of the same railroad are assigned seniority districts and are paid an additional day's pay for performing work beyond those districts. Trains crossing seniority district boundaries generally change crews. These boundaries often define the interfaces between the former systems of merged railroads.

2.2.1.3 Railroad Passenger Ticketing - Current railroad passenger ticketing procedures typically require personnel to check, collect, and sometimes even issue passenger tickets on board the train. This system evolved from the operation of intercity passenger trains, where access to the train coaches was not restricted at the station. With relatively long distances between stations, long distance routes, and multiple car trains, intercity passenger trains fully utilized the services of the labor force required by such a ticketing system. Commuter trains, however, usually run short-haul service during the peak commuting hours, where the distance between stations is small, ridership density is high, and trains typically consist of five or fewer cars. Current crew consist rules require sufficient personnel to individually process passenger tickets.

2.2.2 Fuel and Power

The costs of diesel fuel and electric power used in the propulsion of commuter rail equipment represent about 10 percent

of the total operating expenses associated with commuter rail services.* Although this is a far smaller percentage than the labor component, fuel and power costs have been increasing at a greater rate than any other railroad cost category. Between 1977 and 1981, fuel costs for railroads rose by 180 percent. In contrast, labor expenses rose by 49 percent for the same period.**

2.2.3 Materials and Supplies

Materials and supplies constitute the third general category of railroad operating expenses and include such items as office supplies, equipment and track repair supplies, tools, lubricants, and other material needed for daily operations of rail service. Material and supply costs represent about 18 percent of total commuter rail operating expenses. Materials and supply costs increased by 45 percent between 1977 and 1981,*** at a rate slightly less than the rise in labor costs during the same period.

A significant portion of this cost category results from the materials needed in the maintenance-of-equipment and maintenance-of-way functions for replacing or repairing failing and worn parts and structures. These costs are related primarily to the condition, age, and use of the equipment and right-of-way.

2.2.4 Other Expenses

Other cost categories reflected in the railroads' operating expense reports include:

- . equipment rental;
- . purchased services;

* Based on the average of nine commuter rail systems in the United States in 1980, as reported in the operating railroads' Annual Report Form R-1.

** AAR Railroad Cost Recovery Index, Series RCR-3, June 1982, Economics and Finance Department, Association of American Railroads, Washington, D.C.

*** Ibid.

- . depreciation;
- . interest;
- . taxes;
- . casualties and insurance; and
- . general expenses.

These costs represent about 10 percent of total commuter rail operating expenses. The rate of growth in these expenses between 1977 and 1981 was 47 percent for the railroad industry, or midway between the inflation rates described earlier for labor expenses and material and supply expenses.*

Figure 2 displays the relative proportion of operating costs for commuter rail services which fall into each of the four generic categories described above.

* Ibid.

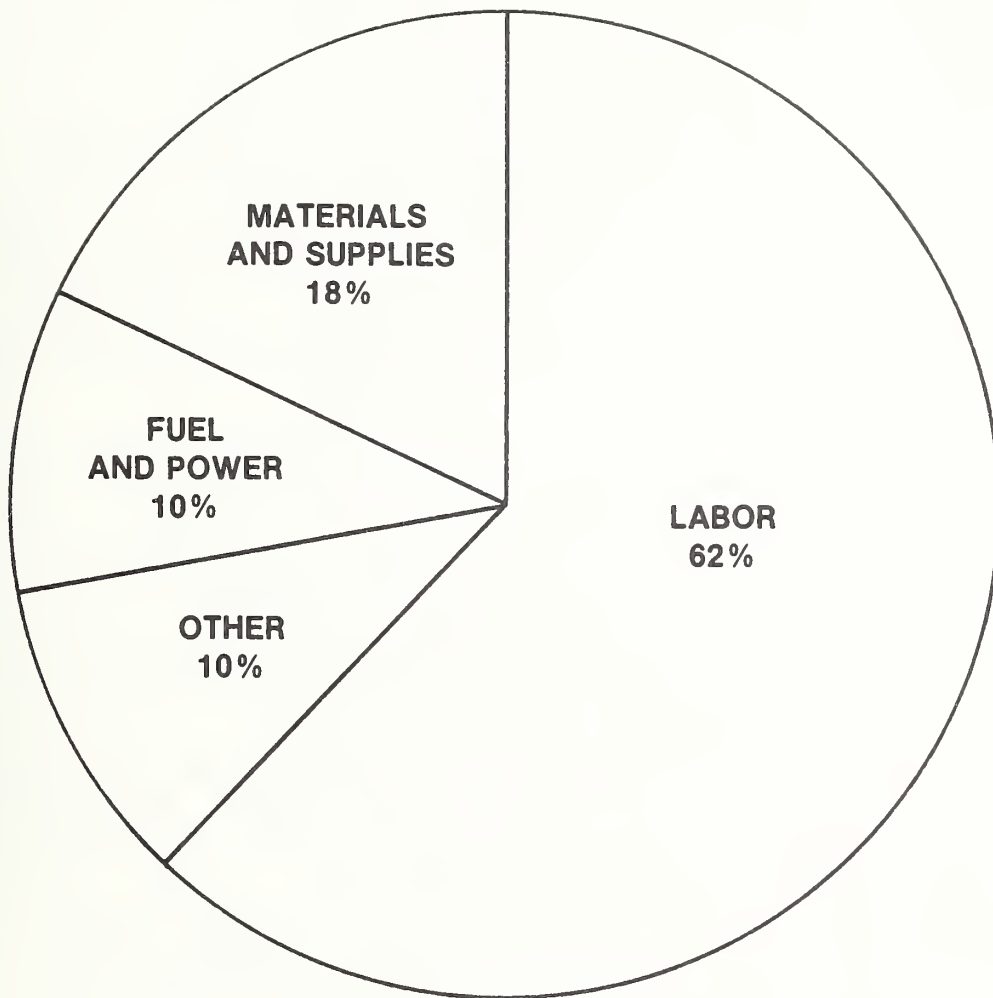


FIGURE 2. GENERIC BREAKDOWN OF COMMUTER RAIL OPERATING COSTS

3. COMMUTER RAIL COST ALLOCATION METHODS

This section describes the major cost allocation methods available for assigning railroad operating expenses to freight and commuter services.

Commuter rail services are typically provided over a railroad right-of-way serving both freight and commuter trains. Because this entails the joint use of equipment, supplies, facilities, and other general overhead services, a methodology is required for allocating costs between freight and commuter services. Such an allocation is important for managing the cost-effectiveness of each service and for establishing the amount of public funding which commuter rail services may be eligible for under various government-sponsored funding programs.

The public contribution to commuter rail service is often provided via a service contract between an operating railroad and an authorizing transportation agency, whereby the agency provides a contribution equal to the difference between the total operating costs associated with the commuter rail operation and the revenues derived from that service. In some instances, the percentage of total commuter rail operating costs which the agency will cover is limited by law.

In order to develop a basis for estimating the costs of commuter rail services, one must understand the nature of railroad operating costs in terms of their causal and variable relationships to the services being provided. This involves identifying whether the specific railroad operating costs are:

- . direct costs, which are specifically identifiable with provision of a particular class of service (i.e., freight versus commuter); or
- . indirect or common costs, which are identifiable with the provision of service in general but not with any particular class of service.

It is also necessary to determine whether the costs are:

- . variable costs, which change as the amount of service increases or decreases; or
- . fixed costs, which do not vary with the amount of service in the short run.

Most commuter rail service contracts stipulate that the operating railroad will be reimbursed for all operating costs

not covered by revenues that are directly related to the provision of commuter rail services. An earlier study estimated that almost 40 percent of all commuter rail operating costs are direct.* Such costs typically include:

- . train and engine crew costs;
- . equipment and station rentals;
- . maintenance of equipment (assuming dedicated equipment);
- . train fuel and power; and
- . train supplies.

Indirect or common costs which apply to the provision of both freight and commuter rail services must be apportioned in some manner between the two services. Such costs typically include:

- . shop overhead;
- . maintenance of way and structures;
- . signal and communication operations;
- . station and yard operations;
- . supervision and administration;
- . insurance and casualty;
- . joint facilities; and
- . property taxes.

The degree to which railroad operating costs can be defined as direct or indirect depends primarily on the ability of the operator or authorizing agency to account for the costs by specific service and the degree to which resources (personnel, supervision, supplies, equipment, stations, shops, and right-of-way) are dedicated to a specific service.

* Issues To Be Considered in Developing Rail Commuter Revenue and Cost Standards, by L. E. Peabody & Associates, Inc., for the Rail Services Planning Office, Interstate Commerce Commission, May 17, 1976, p.6.

Several methods are available for allocating indirect or common operating costs between freight and commuter rail services. These are:

- . variable cost allocation;
- . avoidable cost allocation;
- . attributable cost allocation; and
- . priority of use cost allocation.

In addition, several approaches used by railroads and authorizing agencies represent variations or combinations of these methods. Each of the basic allocation methods is briefly described below.

3.1 VARIABLE COST ALLOCATION

Variable cost allocation distributes the cost of a service among its beneficiaries in proportion to their use of the service. In this study, "service" relates to railroad operating services, and "beneficiaries" consist of freight shippers and commuters. This cost allocation technique requires the total costs associated with a service to be divided into variable and fixed cost elements.

"Variable costs" include those expenses that vary in direct proportion to the amount of service provided, as measured by such output statistics as train-miles or passenger-miles. "Fixed costs" represent those expenses which in the short run do not vary with the amount of service provided. These costs are often allocated to the service beneficiaries in proportion to the variable costs associated with each beneficiary.

3.2 AVOIDABLE COST ALLOCATION

Avoidable cost allocation assigns to a particular beneficiary only those expenses that could be avoided if the beneficiary were not served. Also known as the separable cost/remaining benefits method, this cost allocation technique separates expenses into those which are incurred solely because of an individual beneficiary and those common costs which are shared among beneficiaries.

The primary beneficiary of a service would be assigned the common costs associated with the service which would be incurred without any other beneficiary being served. Only those additional costs which would be incurred by serving secondary beneficiaries are allocated to these other beneficiaries. The primary user thus bears a larger share of the costs, relative to the variable cost method.

Avoidable cost allocation is often used when one beneficiary clearly dominates the use of services. In these cases, the secondary service is actually a marginal operation in terms of usage, and is thus a marginal cost producer. This method is less appropriate when no beneficiary is clearly dominant over all others, as the choice of a "dominant" beneficiary may assign a higher cost to that beneficiary and a correspondingly lower cost to the secondary beneficiary.

3.3 ATTRIBUTABLE COST ALLOCATION

Attributable cost allocation assigns to a particular beneficiary both the avoidable costs associated with that beneficiary and a proportion of the common or shared costs of the service. These common costs are partially borne by all beneficiaries being served. Their allocation among the beneficiaries can be made on the basis of the proportion of avoidable costs associated with each beneficiary, or some common base unit like train-miles, passenger-miles, or direct labor expenses.

The basic distinction between avoidable cost allocation and attributable cost allocation is that the latter includes elements of common costs which are shared among the beneficiaries. Such costs include overhead or general expenses--such as supervision, property taxes, and administrative expenses--which would not be affected materially by the discontinuation of incremental services, but which would be affected by the complete discontinuation of either commuter or freight operations. Attributable costs are usually not defined as easily or applied as simply as avoidable costs, due to the difficulty in determining what proportion of nondirect expenses should be allocated to a beneficiary and what base units will acceptably allocate those costs.

3.4 PRIORITY OF USE COST ALLOCATION

The priority of use cost allocation method determines the common costs of serving the various beneficiaries and allocates

these costs in relative proportion to the priority given to each beneficiary. The basis for this priority can be either the level of service provided or the importance of the beneficiary served. This method is a variation of the avoidable cost allocation method, with the cost allocations to each function being weighted by their relative priority. The priority of use cost allocation method is typically used when certain functions clearly dominate the purpose for which service is provided.

3.5 OTHER COST ALLOCATION APPROACHES

Other cost allocation approaches are possible by combining elements from each of the above methods. This allows separate cost accounts to be treated individually, thus tailoring the methodology to the way in which each activity relates to the functions being provided. The primary example of this approach is the cost allocation methodology developed by the Rail Services Planning Office (RSPO) of the ICC, entitled Standards For Determining Commuter Rail Service Continuation Subsidies (CFR 1127). These standards describe a suggested methodology to be used by railroads in estimating the required subsidy for providing commuter rail services based upon the attributable revenues, avoidable costs, and reasonable return on value for such services. A different methodology for estimating the revenue and cost values may be used, provided the negotiating parties agree to the changes. Therefore, the actual cost allocation methodology contained in the service contract between the railroad and the authorizing agency may differ significantly from these standards, so long as the provisions are agreed to by both parties and are found to be reasonable by the RSPO.

Section 1127.7 of the standards defines the allocation basis for assigning railroad operating costs to commuter rail service. According to this methodology, both direct and common costs may be assigned on the basis of agreed-to facilities and personnel utilization plans which specify:

- . the dominant and secondary users (i.e., priority of use cost allocation);
- . variable operating and user statistics (i.e., variable cost allocation);
- . actual costs incurred (i.e., avoidable cost allocation); and
- . the prior allocation of direct cost accounts (i.e., attributable cost allocation).

Appendix C reproduces the RSPO methodology as presented in the Code of Federal Regulations. The RSPO standards are very detailed in prescribing a suggested basis for determining commuter rail operating costs. The standards provide considerable latitude in the carrier's treatment of various expense areas and are most commonly used for internal cost allocation within a railroad's responsibility accounting system. Since the standards are designed to conform to the Uniform System of Accounts for railroad companies, revised by the ICC in 1978, they are used extensively by railroads in reporting commuter rail operating expenses in the Annual Report Form R-1.

Additional methods of assigning railroad operating costs to commuter rail services include the following:

- . Fixed allocation, whereby a set fee is charged for certain functions based upon special cost studies. This may involve maintenance of way and structures and general and administrative costs.
- . Zero allocation, whereby no charge is made for certain costs, typically common or overhead. This often involves maintenance of way and structures and certain administrative costs.
- . General Managers Association (GMA) rules, which provide a generally accepted basis for estimating the costs associated with the joint use of railroad facilities. The rules contain information concerning surcharge rates to recover the costs of supervision, administration, inspection, and other overhead functions, and equipment rental rates among rail carriers. The surcharge rates are applied to the direct costs of labor, material, tools, supplies, and fuel to arrive at the costs of general overhead functions. So long as the direct costs of commuter rail services are known, the GMA surcharge rates permit the reasonable calculation of the full costs of these services, not including profit.*

More than one method described in this section can be stipulated in a commuter rail service contract. This usually occurs when the parties involved decide that no one approach is

*Rules Governing Preparation of Joint Facility and Other Bills Between Carriers, Circular No. GMA-2710-E, General Managers Association of Chicago, revised July 8, 1982.

suitable for properly assigning all categories of expenses, due to the nature of the cost items, the predominance of one type of service, or the availability of data upon which to base the cost allocation.* For example, transportation and maintenance-of-equipment costs may be allocated on an avoidable cost basis, since many costs within these categories can be directly related to specific services. Maintenance-of-way costs might be allocated on a variable cost method, using the gross-ton miles of service as a base unit. Several administrative and capital costs might be paid as a negotiated lump sum (i.e., a management fee in addition to negotiated capital improvements). The result is a tailored approach to cost allocation.

Table 3 summarizes the cost assignment techniques associated with each of the cost allocation methods described in this chapter. Since each commuter rail system is unique, the choice of cost allocation techniques by an individual system will depend on the nature of that system, its operations, its ridership levels, and its ownership. The effect of different cost allocation techniques will depend on the proportion of non-commuter rail services using the railroad right-of-way; the ownership of equipment, right-of-way, and stations involved in commuter rail services; and the degree to which the operating railroad can distinguish its costs by type of service.

* The sharing of expense categories among freight and passenger operations may also be affected by the nature of the railroad's basic accounting system. The institution of commuter subsidy contracts has at times brought about changes in the recording of expenses, so that separation between passenger and freight services is facilitated. For example, creation of the old Penn Central's Metropolitan Region, encompassing all former New York Central and New Haven commuter lines extending north from Grand Central Terminal in Manhattan, was at least in part accomplished to meet the accounting and managerial requirements of New York State MTA's assumption of responsibility for these operations.

TABLE 3. COMPARISON OF COST ALLOCATION METHODS.

<u>Cost Allocation Method</u>	<u>Basis of Assigning Direct and Common Costs</u>
Variable Cost Allocation	Use-Based Proportional Assignment of Direct and/or Common Costs
Avoidable Cost Allocation	Incremental Assignment of Direct and Common Costs
Attributable Cost Allocation	Incremental Assignment of Direct Costs and Proportional Assignment of Common Costs
Priority of Use Allocation	Priority-Based Proportional Assignment of Direct and Common Costs
Fixed Allocation	Fixed Assignment of Direct and/or Common Costs
Zero Allocation	Zero Assignment of Direct and/or Common Costs
General Managers Association Rules	Direct Cost-Based Proportional Assignment of Common Costs

4. COMMUTER RAIL SYSTEM CASE STUDIES

This section examines the route structure, operating characteristics, ridership levels, principal labor rules, major cost categories, and compensation methods associated with seven commuter rail systems:

- . the Boston and Maine Railroad's commuter system serving the Boston region;
- . the Long Island Rail Road's commuter system serving Long Island;
- . the Baltimore and Ohio Railroad's commuter system serving Baltimore, Maryland, Washington, D.C., and Martinsburg, West Virginia;
- . the Baltimore and Ohio Railroad's commuter system serving the southeastern suburbs of Pittsburgh;
- . the Pittsburgh and Lake Erie Railroad's commuter system serving the northwestern suburbs of Pittsburgh;
- . the Grand Trunk Western Railroad's commuter system serving the northwestern suburbs of Detroit; and
- . the Southern Pacific Railroad's commuter system operating between San Jose and San Francisco.

To ensure a consistent basis for comparison, the operating statistics and cost information contained in this chapter are based on public reports submitted by the operating railroads to the Interstate Commerce Commission. The cost information is based on the Rail Services Planning Office (RSPO) methodology, rather than on the costs actually charged to the authorizing agencies according to the compensation rules prescribed by the operating agreements. Differences among the compensation rules of the operating agreements result in different levels of cost assignment, thus precluding their use in comparing operating efficiencies among commuter rail systems.

4.1 BOSTON AREA: BOSTON AND MAINE RAILROAD COMMUTER SYSTEM

The Boston and Maine Railroad (B&M) provides commuter rail service to the Boston metropolitan area for the Massachusetts Bay Transportation Authority (MBTA). The system comprises 242 miles of right-of-way and 83 stations (see Figure 3) which are owned by the MBTA and maintained by the B&M.

Each weekday 330 one-way trains operate over the MBTA commuter system which shares the right-of-way with B&M freight trains. In addition, Amtrak intercity passenger trains operate between Attleboro and South Station. Most routes also have weekend and holiday service on a reduced schedule. Service is most concentrated during the morning and evening rush hours of each weekday. However, continuous service is also provided during non-rush hour periods and on weekends and holidays, with typically one- to two-hour headways. Trains operate about 18 hours per weekday, and from 10 to 16 hours per day on weekends and holidays, depending on the route.

Boston's commuter service consists of two systems, divided geographically by the Charles River. The North Division represents the original B&M commuter system, and the South Division represents the former Conrail commuter system. While a single operating agreement covers the entire system, the railroad's operations, schedules, route structure, operating budget, and cost documentation are separately maintained. This is due both to the geographic separation of the two divisions and to the different operating and labor agreements originally associated with each division.

4.1.1 Equipment and Facilities

The B&M operation utilizes 37 diesel locomotives which are owned by the MBTA, and 177 passenger coaches, including 95 formerly self-propelled diesel passenger cars (RDCs) and 82 standard passenger cars, all MBTA owned. Thirty-two of the RDCs have already been converted to non-motorized push-pull service, with the remaining 63 RDCs slated for eventual conversion. Fifty-two of the unconverted cars are still in service (primarily push-pull service), with the remaining 11 cars temporarily out of service. The capacity of the MBTA equipment ranges from 78 to 99 passengers per car. The B&M maintains the equipment in its own repair shops and in the MBTA-owned Boston Engine Terminal. The B&M also maintains the MBTA's North Station and South Station, various layover and storage facilities, station and headquarter facilities related to commuter services, commuter rail lines (with the exception of the Northeast Corridor



FIGURE 3. B&M COMMUTER RAIL SYSTEM, BOSTON AREA.

segment south of Boston which is maintained by Amtrak), and maintenance-of-way material yards at Billerica and Boston.

4.1.2 Labor Agreements

Rolling stock, facilities, and right-of-way are maintained by standard railroad craft unions. In limited cases, several maintenance crafts have agreed to a partial overlapping of work tasks to improve productivity.

The B&M determines crew pay on the basis of both time and distance. A day's wages are based on limits of 8 hours or 100 miles for the engine crew, and 9 hours or 150 miles for the train crew. Total hours of duty are limited to 12 hours a day. These combined limits have an effect on labor costs because B&M commuter crews have a 4-hour average layover between runs. As a result, overtime is paid to commuter train crews at a rate of 1.5 times the base rate. In the place of specific arbitraries, the railroad may pay its train personnel a fixed allowance per day, depending on the seniority and division of the employee.

The B&M uses a standard crew of only two people: an engineer and a conductor. An additional crew member is added for every two cars, starting with the second passenger coach. On the 330 daily trains, almost 75 percent of the equipment consists are limited to two coaches. The minimum train size is two coaches, and the maximum is nine coaches. Therefore, the crew size ranges from three to six persons, with the three-person crew predominant. The railroad may run longer trains than necessary and restrict seating to particular cars in order to avoid uncoupling costs. Crewing requirements in this case are based on the number of cars open for seating, not the length of the train. While this reduces labor costs, fuel and maintenance costs are increased somewhat.

4.1.3 Operating Characteristics

Table 4 lists the major ridership, operating, and cost statistics for the B&M commuter rail system for 1980. As indicated, annual ridership was over 9 million persons, with an average fare of \$1.24, an average passenger trip length of almost 18 miles, and an average vehicle loading of over 21 passengers. The system was moderately used, carrying almost 31,000 passengers annually per route-mile. The average train consist was 3.7 cars per train. The total operating expenses according to the RSPO methodology were \$52.7 million, with transportation expenses representing the largest portion at 45 percent. Maintenance-of-equipment expenses amounted to 31 percent,

**TABLE 4. B&M COMMUTER RAIL SYSTEM CHARACTERISTICS, 1980,
BOSTON AREA.**

AGGREGATE SYSTEM STATISTICS

Route-Miles	302
Ridership	9,339,015
Passenger-Miles	166,485,000
Total Passenger Revenues	\$ 11,553,737
Train-Miles	2,125,739
Vehicle-Miles	7,762,491
Transportation Costs	\$ 23,537,000
Maintenance of Equipment Costs	\$ 16,293,000
Maintenance of Way Costs	\$ 9,669,000
General and Administrative Costs	\$ 3,214,000
Total Operating Costs	\$ 52,713,000

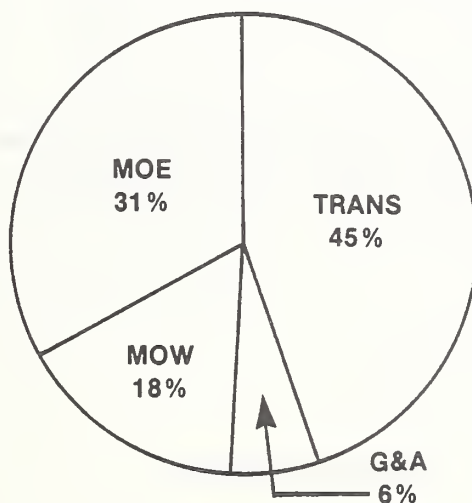
AVERAGE RIDERSHIP AND OPERATING CHARACTERISTICS

Passenger Revenues/Total Operating Costs	21.92%
Passenger Trip Length (miles)	17.83
Passenger Fare	\$ 1.24
Revenue Per Passenger-Mile	\$ 0.07
Passengers Per Route-Mile (000)	30.92
Vehicle-Miles Per Route-Mile (000)	25.70
Passenger-Miles Per Vehicle-Mile	21.45

AVERAGE UNIT OPERATING COSTS

<u>Operating Cost Categories</u>	<u>\$/Passenger</u>	<u>\$/Passenger-Mile</u>	<u>\$/Vehicle-Mile</u>	<u>Percent of Total</u>
Transportation (TRANS)	2.52	0.14	3.03	45
Maintenance of Equipment (MOE)	1.74	0.10	2.10	31
Maintenance of Way (MOW)	1.04	0.06	1.25	18
General and Administrative (G&A)	<u>0.34</u>	<u>0.02</u>	<u>0.41</u>	<u>6</u>
TOTAL	\$5.64	\$0.32	\$6.79	100%

OPERATING COST BREAKDOWN



maintenance-of-way expenses amounted to 18 percent, and general and administrative expenses amounted to 6 percent of the total operating expenses. With an average operating cost of \$5.64 per passenger, the system produced an operating ratio of almost 22 percent.

4.1.4 Basis for Compensation

The current operating agreement between the B&M and the MBTA provides for the B&M to be compensated for all direct expenses incurred in providing commuter rail services and for other supporting functions such as maintenance-to-way and maintenance-to-equipment. Direct costs include items incurred by the Commuter Service Transportation, Mechanical, and Engineering departments of the B&M such as:

- . direct payroll;
- . fringe benefits and payroll taxes;
- . personnel travel expenses;
- . real estate rent;
- . utilities;
- . supplies;
- . fuel;
- . joint facility costs;
- . equipment rental;
- . professional services; and
- . Conrail charges.

General overhead costs were reimbursed by including an additional 12 percent of the direct costs listed above. This percentage represents the costs attributable to commuter service operations for such support services as:

- . administration;
- . finance and accounting;
- . purchasing and stores;
- . labor relations and personnel;

- . security;
- . law and claims processing; and
- . systems analysis.

The B&M also receives an annual management fee of \$500,000 as the commuter service operator.

An innovative feature of the MBTA's operating agreement with the B&M is the inclusion of financial incentives and off-sets based on performance criteria. According to the agreement, the MBTA will pay to the B&M monthly performance incentives based on the on-time performance of train operations, the percentage of equipment consist compliance achieved, and the number of passengers carried in excess of those carried in the same calendar quarter of the previous year. The operating agreement also provides for financial offsets or penalties for less than expected on-time and consist compliance performance. The level of total performance-based incentives for which the railroad is eligible is limited to a fixed amount (up to \$800,000 in the first year of the operating agreement). However, the railroad may also receive 50 percent of the operating savings resulting from MBTA-approved capital improvements recommended by the B&M during the first 12 months that the improvement is in effect. From all of the incentive funds paid to the B&M, the operating agreement calls for up to \$200,000 annually to be set aside as a liability fund, for payment of damages for claims resulting from the provision of commuter rail services.

As the owner of the right-of-way, stations, and equipment, the MBTA is directly responsible for a significant portion of the capital expenses associated with the commuter rail system. As a result, the B&M costs associated with track, facilities, and equipment are primarily direct costs, particularly in regard to stations and equipment which are dedicated to the commuter rail service. Both B&M and Amtrak are charged maintenance-of-way fees for using MBTA-owned right-of-way for freight and intercity passenger operations, respectively. The B&M fees are based on the gross ton-miles of freight traffic using a rate prescribed by the General Managers Association. The Amtrak remuneration is contained within their bill to MBTA for maintenance performed by Amtrak on portions of the South Division. The MBTA thus picks up more than the avoidable costs of commuter rail maintenance-of-way costs as a result of owning the right-of-way. In return, the MBTA controls the facility and the services which can be provided using it.

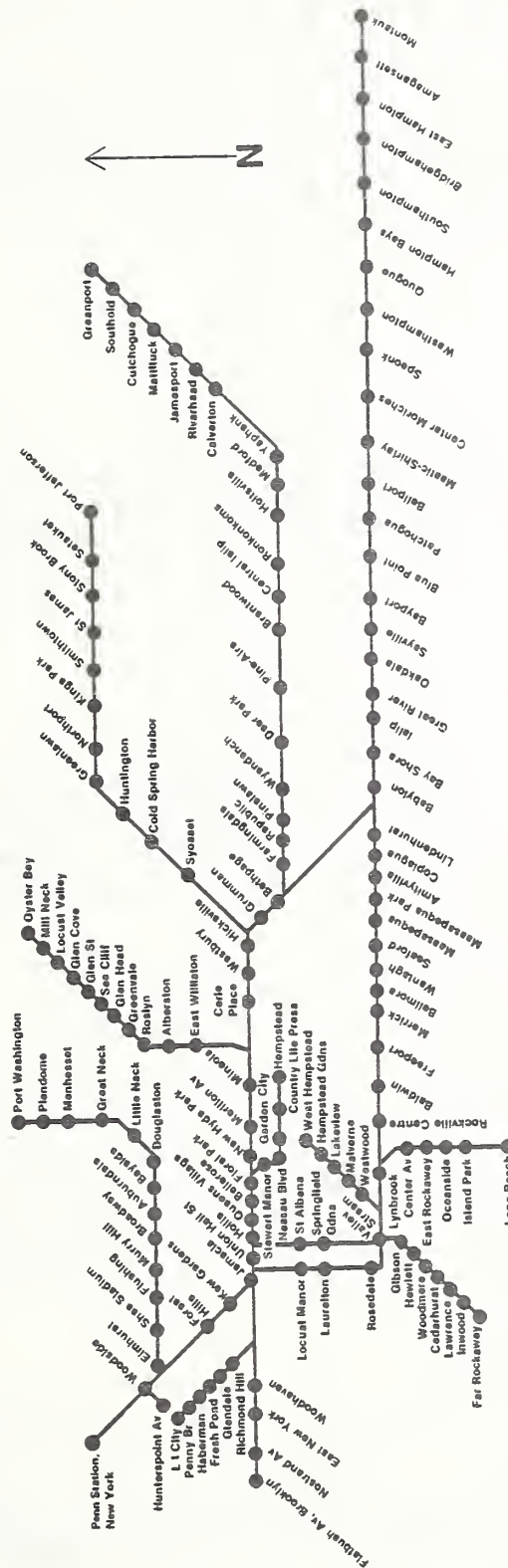
The attributable cost-based compensation methodology prescribed by the current MBTA operating agreement with the B&M can be summarized as follows:

- . Direct costs of transportation, maintenance-of-equipment, and maintenance-of-way functions: 100 percent assignment to MBTA;
- . Overhead costs: 12 percent of direct costs;
- . Management fee: Fixed rate of \$500,000;
- . On-time performance incentives/offsets: Ranging from a maximum monthly incentive of \$75,000 to a maximum monthly offset of \$41,700;
- . Consist compliance incentives/offsets: Ranging from a maximum monthly incentive of \$50,000 to a maximum monthly offset of \$41,700;
- . Ridership incentives: 10 cents per incremental passenger;
- . Capital improvement savings: 50 percent of one year's operating savings from B&M-recommended capital improvements; and
- . Liability costs: Up to \$200,000 for liability fund from performance incentives.

This agreement became effective on January 1, 1982, with a term of five years subject to annual approval of the budgetary provisions by the Advisory Board of the MBTA.

4.2 LONG ISLAND AREA: LONG ISLAND RAIL ROAD COMMUTER SYSTEM

The Long Island Rail Road (LI) provides commuter rail service from Long Island to New York City for the Metropolitan Transportation Authority (MTA). The system comprises 319 miles of right-of-way and 144 stations (see Figure 4) which are owned and maintained by the LI. The railroad is a wholly-owned subsidiary of the MTA and is thus a "public benefit" corporation subsidized by the MTA. No formal operating agreement is therefore needed between LI and MTA. Each weekday 1,138 one-way trains operate over the LI rail system which also carries LI freight operations.



Stations 144
 Route Miles: 319
 System Trains Per Day: 1,138
 Operating Railroad: The Long Island Rail Road
 Sponsoring Authority: The Metropolitan Transportation Authority

Note : Map Not To Scale

FIGURE 4. LI COMMUTER RAIL SYSTEM, LONG ISLAND AREA.

The commuter operation represents the predominant use of the Long Island Rail Road's system, which terminates at Penn Central Station in New York City. Service is most concentrated in the morning and evening rush hours of each weekday. Significant service is also provided during non-rush hours of each weekday and on weekends and holidays. Service operates around the clock on certain heavily-used routes, with two hour headways common during the late night hours.

4.2.1 Equipment

The LI operation utilizes 67 diesel locomotives, 764 electric multiple unit cars, and 250 passenger coaches, which are primarily leased from the Port Authority of New York and New Jersey. The passenger capacity of this equipment is 120 for the multiple unit cars, and 115 to 118 for the coaches.

4.2.2 Labor Agreements

Because the LI operates a predominantly passenger-oriented system, it has negotiated labor agreements that differ substantially from the national agreements used by most railroads. The LI management believes that the current agreement, negotiated in the early 1970s, has resulted in considerable cost savings.

All equipment maintenance is performed by LI personnel, organized by standard railroad craft unions. As yet, "composite" mechanics cannot be utilized on the LI.

The LI labor agreement contains no mileage limitations on a day's work for operating personnel. A day's pay is based on 8 hours work, with overtime paid at 1.5 times the base rate. Total hours of duty are still limited to 12 hours a day, and employees are guaranteed 40 hours pay per week. The railroad does not use split shifts. Crews work morning or evening peak periods, but they make more than one trip, as they have no mileage limitations.

The LI labor agreement does not set crewing requirements for trains. The railroad operates with a standard train crew of three: an engineer, a conductor, and a trainman. The railroad does not have firemen. Personnel previously holding that position are being retrained as engineers. Those who do not qualify as engineers at the end of three years are terminated. Additional crew members are added on the basis of ridership levels and ticketing requirements. With trains ranging in size from two to twelve cars, the crew size ranges from four to nine persons, with the six-person crew predominant.

Most arbitraries have been eliminated, but an extra day's wages is still paid to anyone who performs work under two different classes of service. Freight and passenger trains are different classes of service, as are locomotive-pulled passenger cars and self-propelled passenger cars.

Table 5 lists the major ridership, operating, and cost statistics for the LI commuter rail system for 1980. As indicated, annual ridership was almost 81 million persons, with an average fare of \$1.84, an average passenger trip length of almost 28 miles, and an average vehicle loading of over 46 passengers. The LI commuter rail system is very heavily used, with over a quarter million annual passengers per route-mile. The average train consist was 6.2 cars per train.

The total operating expenses according to the RSPO methodology were \$335.1 million. This represents over 90 percent of the LI's total operating expenses for 1980 and reflects the overwhelming predominance of the passenger operation. Transportation expenses amounted to 48 percent, maintenance-of-equipment expenses amounted to 22 percent, maintenance-of-way expenses amounted to 21 percent, and general and administrative expenses amounted to 9 percent of the total operating expenses for the commuter service. With an average operating cost of \$4.15 per passenger, the system produced an operating ratio of over 44 percent. This relatively high operating ratio resulted from favorable labor agreements with operating personnel, a moderate fare policy, and the scale economies inherent in the highly concentrated operation and patronage of the system.

4.2.3 Basis for Compensation

Due to the predominance of the LI's passenger operations and its ownership by the MTA, the railroad uses the RSPO cost allocation methodology for estimating the costs assignable to commuter rail services (see Appendix C for details). Since the MTA is responsible for all costs of the LI, the RSPO cost allocation methodology provides an adequate basis for allocating costs between freight and passenger services and for meeting federal reporting requirements of the ICC. Additional cost allocation would serve little purpose under these conditions.

4.3 WASHINGTON, D.C., AREA: BALTIMORE AND OHIO RAILROAD COMMUTER SYSTEM

The Baltimore and Ohio Railroad (B&O), part of the CSX Corporation, provides commuter rail service via two routes into

**TABLE 5. LI COMMUTER RAIL SYSTEM CHARACTERISTICS, 1980,
LONG ISLAND AREA.**

AGGREGATE SYSTEM STATISTICS

Route-Miles	319
Ridership	80,841,783
Passenger-Miles	2,249,535,417
Total Passenger Revenues	\$ 148,849,957
Train-Miles	7,828,085
Vehicle-Miles	48,759,000
Transportation Costs	\$ 162,136,000
Maintenance of Equipment Costs	\$ 73,627,000
Maintenance of Way Costs	\$ 69,185,000
General and Administrative Costs	\$ 30,131,000
Total Operating Costs	\$ 335,079,000

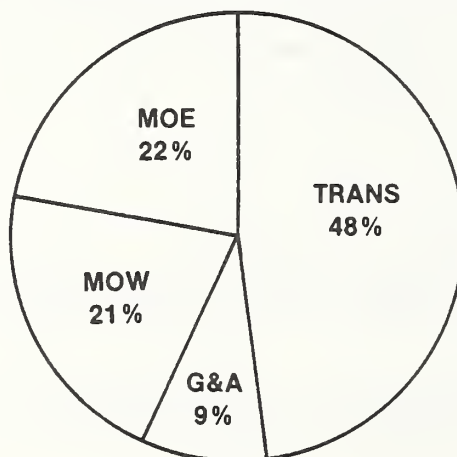
AVERAGE RIDERSHIP AND OPERATING CHARACTERISTICS

Passenger Revenues/Total Operating Costs	44.42%
Passenger Trip Length (miles)	27.83
Passenger Fare	\$ 1.84
Revenue Per Passenger-Mile	\$ 0.07
Passengers Per Route-Mile (000)	253.42
Vehicle-Miles Per Route-Mile (000)	152.85
Passenger-Miles Per Vehicle-Mile	46.14

AVERAGE UNIT OPERATING COSTS

<u>Operating Cost Categories</u>	<u>\$/Passenger</u>	<u>\$/Passenger- Mile</u>	<u>\$/Vehicle- Mile</u>	<u>Percent of Total</u>
Transportation (TRANS)	2.01	0.07	3.32	48
Maintenance of Equipment (MOE)	0.91	0.03	1.51	22
Maintenance of Way (MOW)	0.86	0.03	1.42	21
General and Administrative (G&A)	0.37	0.01	0.62	9
TOTAL	\$4.15	\$0.14	\$6.87	100%

OPERATING COST BREAKDOWN



Washington, D.C. The service between Baltimore, Maryland, and Washington, D.C., is funded by the Maryland Department of Transportation (MDOT), through its State Railroad Administration. The service between Martinsburg, West Virginia, and Washington, D.C., is only partially funded. MDOT funds the operation between Brunswick, Maryland, and Washington, D.C. No public funding is currently being provided for the West Virginia portion of the route.

The combined system comprises 111.5 miles of right-of-way and 26 stations (see Figure 5). The right-of-way and stations are owned and maintained by the B&O. The stations in Maryland are leased to the state, which sublets them to the counties in which they are located. Capital improvements to the stations are therefore the responsibility of the appropriate counties. Each weekday 18 one-way trains operate over the MDOT commuter system which shares the right-of-way with freight trains and Amtrak intercity passenger trains via the Martinsburg route. Freight service is the predominant user of these routes. Ten commuter trains operate daily between Washington, D.C. and Baltimore. Eight commuter trains operate daily between Washington, D.C. and Brunswick. Only two commuter trains daily operate as far as Martinsburg.

Service is provided only in the rush hour periods of each weekday. Scheduled headways between trains range from fifteen minutes to one hour. No service is provided on weekends or holidays.

4.3.1 Equipment

The B&O operation utilizes 5 diesel locomotives, 10 RDCs of 89-passenger capacity, and 22 coaches of 88- to 95-passenger capacity, all of which are owned by MDOT. The B&O also maintains a diesel locomotive, a power control unit, and eight RDCs for use on the West Virginia portion of the system and as spares in case the MDOT equipment is being repaired or maintained. All equipment, regardless of ownership, is maintained by the B&O. Likewise, all track and stations are maintained by the B&O (with the exception of Washington's Union Station).

4.3.2 Labor Agreements

Both maintenance-of-equipment and maintenance-of-way are performed by B&O's standard railroad craft union crews.



FIGURE 5. B&O COMMUTER RAIL SYSTEM, WASHINGTON, D.C. AREA.

Like the B&M, the B&O determines crew wages on the basis of both time and distance limits. A day's wages are based on limits of 9 hours or 100 miles for the engine crew, and 9 hours or 150 miles for the train crew. Overtime is paid on a time-and-one-half basis for members of the engine crew, which includes an engineer and a fireman. Overtime for members of the train crew (conductors and brakemen) are paid at straight time. Total hours of duty are limited to 12 hours a day for members of the operating crew. Due to the significant length of runs incurred on the B&O commuter rail system operated for MDOT, these limits result in significant overtime being paid. In some cases, the engine crew is paid two days' wages for each day worked.

Crew members are guaranteed at least a fixed amount per day worked, and they receive a monthly guarantee as well. Overtime is not included in computing wages earned against the monthly guarantee. Arbitraries are also provided in the event that a crew operates two different types of equipment in a day,* a brakeman is needed to assist a conductor in processing passenger tickets, or the train crew is involved in a short turnaround service run.

The standard crew consists of four people: engineer, fireman, conductor, and brakeman. The standard crew is used on trains consisting of from two to five passenger cars. If the train consists of a single RDC car, then a reduced three-person crew is used. For the larger trains, the brakeman is upgraded to an assistant conductor to help process passenger tickets.

4.3.3 Operating Characteristics

Table 6 lists the major ridership, operating, and cost statistics for the B&O commuter rail system in the Washington, D.C. area for 1980. As indicated, annual ridership was 823,000, with an average fare of \$3.10, an average passenger trip length of over 24 miles, and an average loading of over 34 passengers per vehicle. The passenger density was relatively light amounting to over 7,000 passengers annually per route-mile. The average train consist was 1.8 cars per train. The total operating expenses according to the RSPO methodology were \$5.5 million,

* The B&O uses two kinds of equipment on its commuter service: standard locomotives pulling passenger coaches and self-propelled diesel passenger cars.

**TABLE 6. B&O COMMUTER RAIL SYSTEM CHARACTERISTICS, 1980,
WASHINGTON, D.C. AREA.**

AGGREGATE SYSTEM STATISTICS

Route-Miles	112
Ridership	823,000
Passenger-Miles	19,866,000
Total Passenger Revenues	\$ 2,548,000
Train-Miles	204,000
Vehicle-Miles	579,000
Transportation Costs	\$ 3,448,000
Maintenance of Equipment Costs	\$ 1,568,000
Maintenance of Way Costs	\$ 310,000
General and Administrative Costs	\$ 174,000
Total Operating Costs	\$ 5,500,000

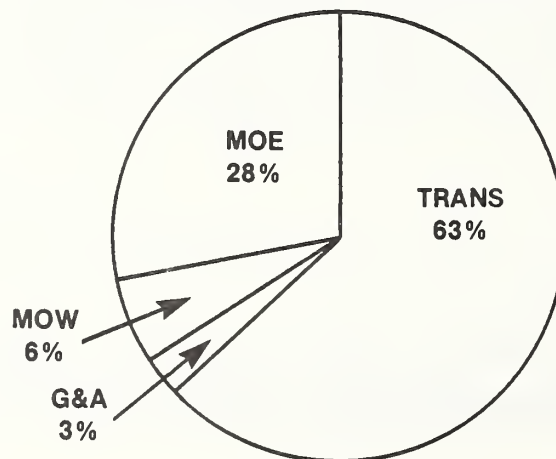
AVERAGE RIDERSHIP AND OPERATING CHARACTERISTICS

Passenger Revenues/Total Operating Costs	46.33%
Passenger Trip Length (miles)	24.14
Passenger Fare	\$ 3.10
Revenue Per Passenger-Mile	\$ 0.13
Passengers Per Route-Mile (000)	7.35
Vehicle-Miles Per Route-Mile (000)	5.17
Passenger-Miles Per Vehicle-Mile	34.31

AVERAGE UNIT OPERATING COSTS

<u>Operating Cost Categories</u>	<u>\$/Passenger</u>	<u>\$/Passenger-Mile</u>	<u>\$/Vehicle-Mile</u>	<u>Percent of Total</u>
Transportation (TRANS)	4.19	0.17	5.95	63
Maintenance of Equipment (MOE)	1.90	0.08	2.71	28
Maintenance of Way (MOW)	0.38	0.02	0.54	6
General and Administrative (G&A)	<u>0.21</u>	<u>0.01</u>	<u>0.30</u>	<u>3</u>
TOTAL	\$6.68	\$0.28	\$9.50	100%

OPERATING COST BREAKDOWN



with transportation expenses representing the largest portion at 63 percent. Maintenance-of-equipment expenses amounted to 28 percent, maintenance-of-way expenses amounted to only 6 percent, and general and administrative expenses amounted to only 3 percent of the total operating expenses. The low percentages of these last two categories result from the predominance of the freight services operated over the B&O rail lines. With an average operating cost of \$6.68 per passenger, the system produced an operating ratio of over 46 percent. This relatively high operating ratio resulted primarily from a moderate fare policy.

MDOT's fare structure was changed in 1981 when the state legislature passed a bill requiring that commuter rail service levels be maintained to at least the levels of July 1981, and that operating revenues derived from the service amount to at least 50 percent of the total operating expenses. Subsequently, a 30-percent fare increase was instituted in 1981, with another 9-percent increase slated for late 1982. These increases are designed to produce an operating ratio of 50 percent, despite the resulting loss of fare-sensitive passengers. As a result, passenger ridership has been gradually declining since 1980.

4.3.4 Basis for Compensation

The current operating agreement between the B&O and MDOT provides for the B&O to be compensated for all direct expenses incurred in providing commuter rail services and other supporting functions such as maintenance-of-equipment. Direct costs include such major items as:

- . direct payroll;
- . fringe benefits and payroll taxes;
- . personnel travel expenses;
- . Washington Terminal fee of \$61 per vehicle per direction for accessing Union Station (joint facility costs);
- . direct billings from the Washington Terminal and the B&O shops for maintenance of commuter service equipment;
- . proportionate share of liability and property damage insurance;
- . utilities;

- . printed materials;
- . supplies; and
- . fuel.

Items which are not allocated to the commuter rail service include:

- . maintenance-of-way and structures;
- . property taxes; and
- . shop overhead.

The costs associated with these items are absorbed by the B&O freight service. General and administrative costs and station operations costs are reimbursed through a fixed monthly fee of \$10,083. This accounts for station employees, administrative services, and other common costs associated with the commuter rail service.

When compared with the allocation of operating expenses by the RSPO methodology, this approach reduces the costs burden on MDOT by eliminating the costs for maintenance-of-way and structures and limiting recovery for general and administrative expenses to \$120,000 per year. The fact that MDOT also purchased its own operating equipment and had it refurbished in 1981 should further reduce this burden by reducing maintenance-of-equipment costs.

The B&O-MDOT operating agreement became effective on January 1, 1979, and has a term of six and one-half years, ending on June 30, 1985.

4.4 PITTSBURGH AREA: BALTIMORE AND OHIO RAILROAD COMMUTER SYSTEM

The Baltimore and Ohio Railroad operates a second commuter rail service in the southeastern suburbs of Pittsburgh. The service is funded by the Port Authority of Allegheny County (PAT) and the Pennsylvania Department of Transportation (PADOT). The system comprises a single 18-mile right-of-way and five stations between Versailles and Pittsburgh (see Figure 6). Of the 18-mile route, about 8 miles between Sims and Rankin are owned by the Pittsburgh and Lake Erie Railroad (P&LE) which permits the B&O operating authority to use the line through a

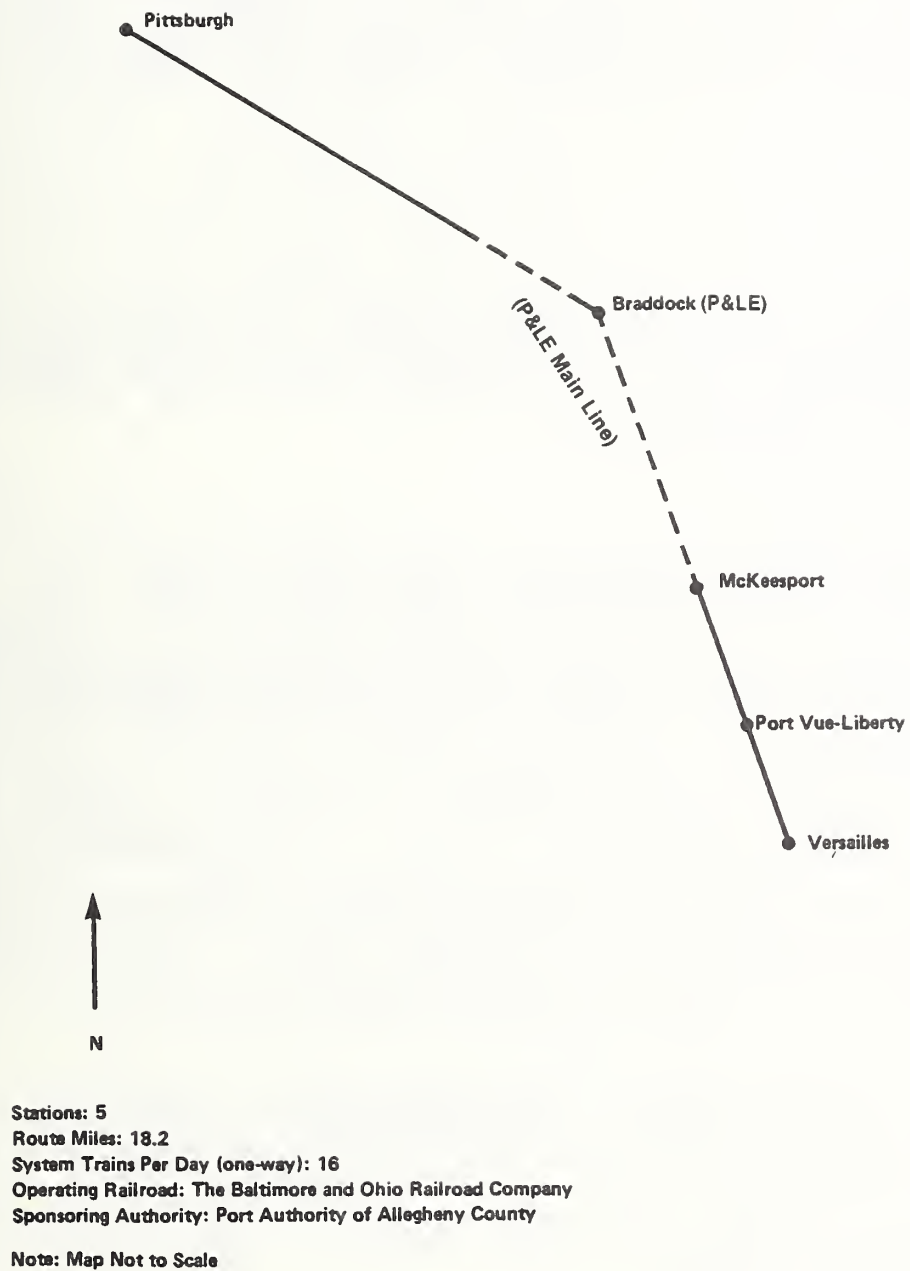


FIGURE 6. B&O COMMUTER RAIL SYSTEM, PITTSBURGH AREA.

trackage rights agreement. The remainder of the route and stations are owned and maintained by the B&O using their own crews.

Each weekday 16 one-way trains operate over this single route system which shares the right-of-way with both B&O and P&LE freight trains. Freight service is the predominant user of the right-of-way. Commuter rail service is limited to weekdays, with 35-minute minimum headways during the peak commuting hours. Limited service is provided during the midday off-peak period as well.

4.4.1 Equipment

The B&O operation utilizes two diesel locomotives, three cab control cars, and ten passenger coaches with a seating capacity of 102 passengers each. Two train sets of four cars each are used in push-pull operation. PAT owns the equipment, and the B&O operates and maintains it.

4.4.2 Labor Agreements

Both maintenance-of-equipment and maintenance-of-way are performed by B&O's standard railroad craft union crews.

The B&O commuter rail operation in Pittsburgh uses the same basis of pay provisions for determining direct wages and overtime as the operation in the Washington, D.C., area. The B&O operating crew wages are determined on the basis of both time and distance limits. A day's wages are based on limits of 9 hours or 100 miles for the engine crew, and 9 hours or 150 miles for the train crew. Overtime is paid on a time-and-one-half basis for members of the engine crew, which includes an engineer and a fireman. Overtime for members of the train crew (conductors and brakemen) are paid at straight time. Total hours of duty are limited to 12 hours a day for members of the operating crew.

The standard crew consists of four people: engineer, fireman, conductor, and brakeman. In Pittsburgh, engine crew members receive a mileage guarantee, while trainmen receive a monthly guarantee (30 days). As in the Washington, D.C., system, overtime is not included when computing wages earned against the monthly guarantee. Arbitrariness are limited to trainmen assigned to short turnaround service.

4.4.3 Operating Characteristics

Table 7 lists the major ridership, operating, and cost statistics for the B&O commuter rail operation in the Pittsburgh area for 1980. As indicated, annual ridership was 352,257, with an average fare of \$1.00, an average passenger trip length of 15.5 miles, and an average loading of just over 8 passengers per vehicle. The system was moderately used carrying almost 20,000 passengers annually per route-mile. The total operating expenses according to the RSPO methodology were \$1.6 million, with transportation expenses representing the largest portion at 50 percent. Maintenance-of-equipment expenses amounted to 46 percent, maintenance-of-way expenses amounted to only 3 percent, and general and administrative expenses amounted to only one percent. As with the B&O operation in the Washington area, the low percentages of these last two categories of operating expenses reflect the predominant use of the right-of-way and administrative resources by the freight services. With an average operating cost of \$4.57 per passenger, the system provided an operating ratio of less than 22 percent.

4.4.4 Basis for Compensation

The current operating agreement between the B&O and PAT provides for the B&O to be compensated for all direct expenses incurred in providing commuter rail services and other supporting functions such as maintenance-of-equipment. Direct costs include such major items as:

- . direct payroll;
- . payroll taxes;
- . personnel travel expenses;
- . trackage rights charges for use of the Pittsburgh and Lake Erie Railroad main line;
- . direct billings from the B&O shop for maintenance of commuter service equipment;
- . proportionate share of liability and property damage insurance;
- . utilities;
- . printed materials;
- . supplies; and
- . fuel.

**TABLE 7. B&O COMMUTER RAIL SYSTEM CHARACTERISTICS, 1980,
PITTSBURGH AREA.**

AGGREGATE SYSTEM STATISTICS

Route-Miles	18
Ridership	352,257
Passenger-Miles	5,443,709
Total Passenger Revenues	\$ 353,000
Train-Miles	173,000
Vehicle-Miles	666,000
Transportation Costs	\$ 803,000
Maintenance of Equipment Costs	\$ 747,000
Maintenance of Way Costs	\$ 47,000
General and Administrative Costs	\$ 15,000
Total Operating Costs	\$1,612,000

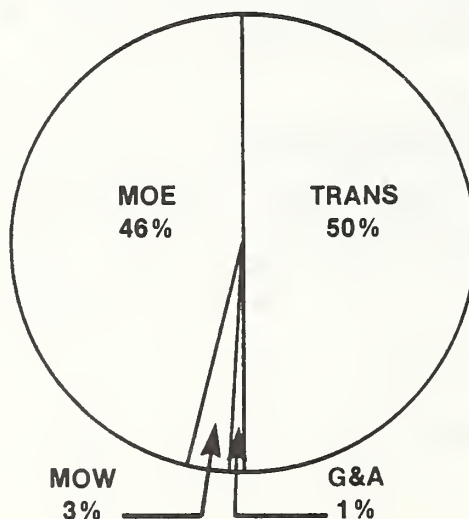
AVERAGE RIDERSHIP AND OPERATING CHARACTERISTICS

Passenger Revenues/Total Operating Costs	21.90%
Passenger Trip Length (miles)	15.45
Passenger Fare	\$ 1.00
Revenue Per Passenger-Mile	\$ 0.06
Passengers Per Route-Mile (000)	19.57
Vehicle-Miles Per Route-Mile (000)	37.00
Passenger-Miles Per Vehicle-Mile	8.17

AVERAGE UNIT OPERATING COSTS

<u>Operating Cost Categories</u>	<u>\$/Passenger</u>	<u>\$/Passenger-Mile</u>	<u>\$/Vehicle-Mile</u>	<u>Percent of Total</u>
Transportation (TRANS)	2.28	0.15	1.21	50
Maintenance of Equipment (MOE)	2.12	0.14	1.12	46
Maintenance of Way (MOW)	0.13	0.01	0.07	3
General and Administrative (G&A)	<u>0.04</u>	<u>0.00</u>	<u>0.02</u>	<u>1</u>
TOTAL	\$4.57	\$0.30	\$2.42	100%

OPERATING COST BREAKDOWN



Property taxes on the station in Pittsburgh are allocated on the basis of square feet of space used by the commuter agent stationed there. The costs of maintenance-of-way and shop overhead for the commuter rail service are not billed to PAT by the B&O but are absorbed by the B&O freight service. However, the direct costs for maintaining the stations are charged to PAT.

General and administrative costs (including employee fringe benefits) are reimbursed through the use of General Managers Association (GMA) overhead rates applied to the direct labor costs associated with the following expense categories:

- . transportation (train and engine crews);
- . maintenance-of-equipment;
- . maintenance-of-way and structures (stations only);
and
- . clerical services.

In the absence of more detailed records or special studies, these rates provide an approved basis for estimating the costs of various general and administrative services used in the provision of commuter rail services.

The B&O-PAT operating agreement also prescribes both equipment maintenance standards and service performance standards. The equipment maintenance standards specify the minimum frequencies of cleaning the interior and exterior of commuter service equipment. The service and performance standards specify minimum on-time service and equipment availability levels. Financial penalties are prescribed when the B&O fails to comply with these minimum standards.

The B&O-PAT operating agreement became effective on June 1, 1978, and has a term of five years ending May 31, 1983.

4.5 PITTSBURGH AREA: PITTSBURGH AND LAKE ERIE RAILROAD COMMUTER SYSTEM

The Pittsburgh and Lake Erie Railroad (P&LE) provides commuter rail service to the northwestern suburbs of Pittsburgh. At present, there is no formal service contract between the P&LE and any public agency regarding this service. However, the Beaver County Transit Authority (BCTA) serves as the local agent for limited funding by PADOT. The railroad has

submitted several applications for UMTA funding. These are awaiting the results of audits of the service now being performed by BCTA.

The system comprises a single 31-mile right-of-way and 11 stations between College and Pittsburgh (see Figure 7) which are owned and maintained by the P&LE. Each weekday a single four-car train operates into Pittsburgh during the morning rush hour and returns to College during the evening rush hour. Only one round trip per day is provided, with no service on weekends or holidays. Freight service is the predominant user of the right-of-way over which by the commuter train operates.

4.5.1 Equipment

The P&LE maintains two general purpose diesel locomotives and five passenger coaches with a seating capacity of 85 passengers per car. The locomotives can also be used for minor freight switching service during the time in which they are idle.

4.5.2 Labor Agreements

Maintenance of the equipment used in the P&LE commuter rail service is performed by the P&LE's standard union crews.

The standard operating crew consists of four persons: an engineer and a fireman make up the engine crew, while a conductor and a brakeman make up the train crew. The P&LE determines crew pay on the basis of both time and distance. A day's wages are based on limits of 8 hours or 100 miles for the engine crew, and 8 hours or 150 miles for the train crew. Total hours of duty are limited to 12 hours a day. Overtime is paid on the basis of time and one-half the base rate. Because only a single crew is used for this service involving over a 9-hour layover per day between runs, the engine crew normally receives 4.3 hours overtime per day and the train crew normally receives 3.8 hours overtime per day. Arbitraries may be paid to the engine crew for reporting early, depending on the season. This amounts to between 30 minutes and one hour straight time pay per day. The train crew typically receives a 30-minute arbitrary at straight time per day. Only the train crew receives a guarantee, amounting to 30 days per month. In addition to the single engine and train crew, a ticket clerk at the Pittsburgh Terminal spends half time and a clerk typist spends quarter time involved in the commuter rail service.

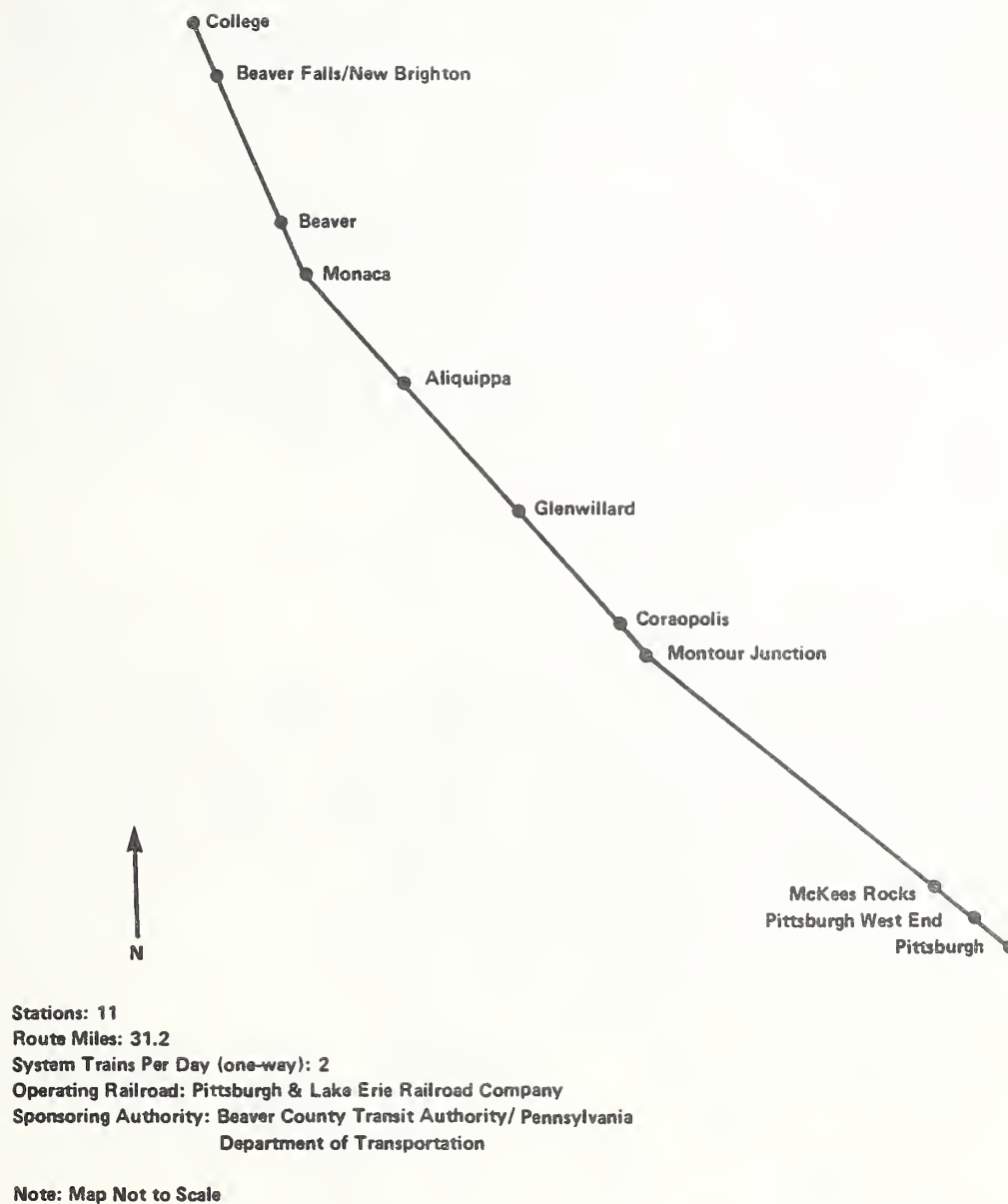


FIGURE 7. P&LE COMMUTER RAIL SYSTEM, PITTSBURGH AREA.

4.5.3 Operating Characteristics

Table 8 lists the major ridership, operating, and cost statistics for the P&LE commuter rail system for 1980. As indicated, annual ridership was almost 115,000, with an average fare of \$1.13, an average passenger trip length of over 22 miles, and an average vehicle loading of almost 37 passengers. The fare levels have not changed since 1980, although a second morning train was eliminated in October 1980. The system was lightly used, carrying almost 4,000 passengers annually per route-mile. The total operating expenses according to the RSPO methodology were almost \$1.3 million, with transportation expenses representing the largest portion at 68 percent. Maintenance-of-equipment expenses amounted to 20 percent, maintenance-of-way expenses amounted to only 3 percent, and general and administrative expenses amounted to 9 percent. The low maintenance-of-way expense percentage reflects the predominant use of the right-of-way by freight services, which absorb most of these costs. With an average operating cost of \$10.97 per passenger, the system produced an operating ratio of only 10 percent. This represents the highest cost per passenger and the lowest operating ratio of the systems studied in this report, and reflects the very low density of operations and ridership demand. With operating employees being paid up to 16 hours a day for what amounts to only two and one-half hours running time, the basis for these high costs becomes readily apparent.

4.5.4 Basis for Compensation

The current funding agreement between the P&LE and PADOT provides for the P&LE to be reimbursed for up to 70 percent of approved operating expenses. While this 70 percent figure is not absolute, it does reflect a concern that revenues cover at least 30 percent of the total operating costs of the service. The P&LE currently submits to BCTA and PADOT the following direct expense items for reimbursement:

- . operating and station labor costs;
- . maintenance-of-equipment costs;
- . maintenance-of-way (shelters and coachwashing facility only);
- . utilities;
- . supplies;

**TABLE 8. P&LE COMMUTER RAIL SYSTEM CHARACTERISTICS, 1980,
PITTSBURGH AREA.**

AGGREGATE SYSTEM STATISTICS

Route-Miles	31
Ridership	114,859
Passenger-Miles	2,575,841
Total Passenger Revenues	\$ 129,312
Train-Miles	30,504
Vehicle-Miles	70,000
Transportation Costs	\$ 863,000
Maintenance of Equipment Costs	\$ 247,000
Maintenance of Way Costs	\$ 33,000
General and Administrative Costs	\$ 117,000
Total Operating Costs	\$1,260,000

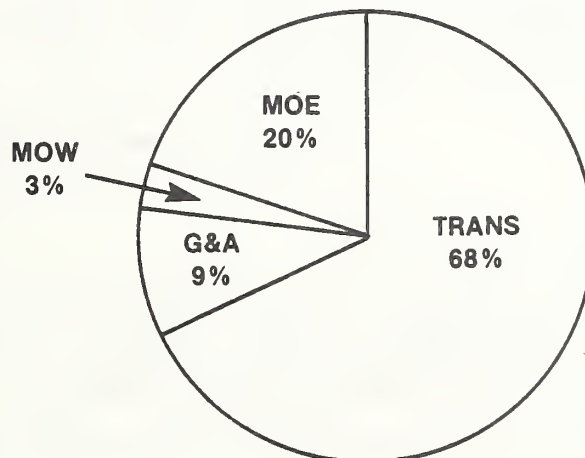
AVERAGE RIDERSHIP AND OPERATING CHARACTERISTICS

Passenger Revenues/Total Operating Costs	10.26%
Passenger Trip Length (miles)	22.43
Passenger Fare	\$ 1.13
Revenue Per Passenger-Mile	\$ 0.05
Passengers Per Route-Mile (000)	3.71
Vehicle-Miles Per Route-Mile (000)	2.26
Passenger-Miles Per Vehicle-Mile	36.80

AVERAGE UNIT OPERATING COSTS

<u>Operating Cost Categories</u>	<u>\$/Passenger</u>	<u>\$/Passenger-Mile</u>	<u>\$/Vehicle-Mile</u>	<u>Percent of Total</u>
Transportation (TRANS)	7.51	0.33	12.33	68
Maintenance of Equipment (MOE)	2.15	0.10	3.53	20
Maintenance of Way (MOW)	0.29	0.01	0.47	3
General and Administrative (G&A)	<u>1.02</u>	<u>0.05</u>	<u>1.67</u>	<u>9</u>
TOTAL	\$10.97	\$0.49	\$18.00	100%

OPERATING COST BREAKDOWN



- . casualty and liability claims and insurance;
- . property taxes (shelters only); and
- . fuel.

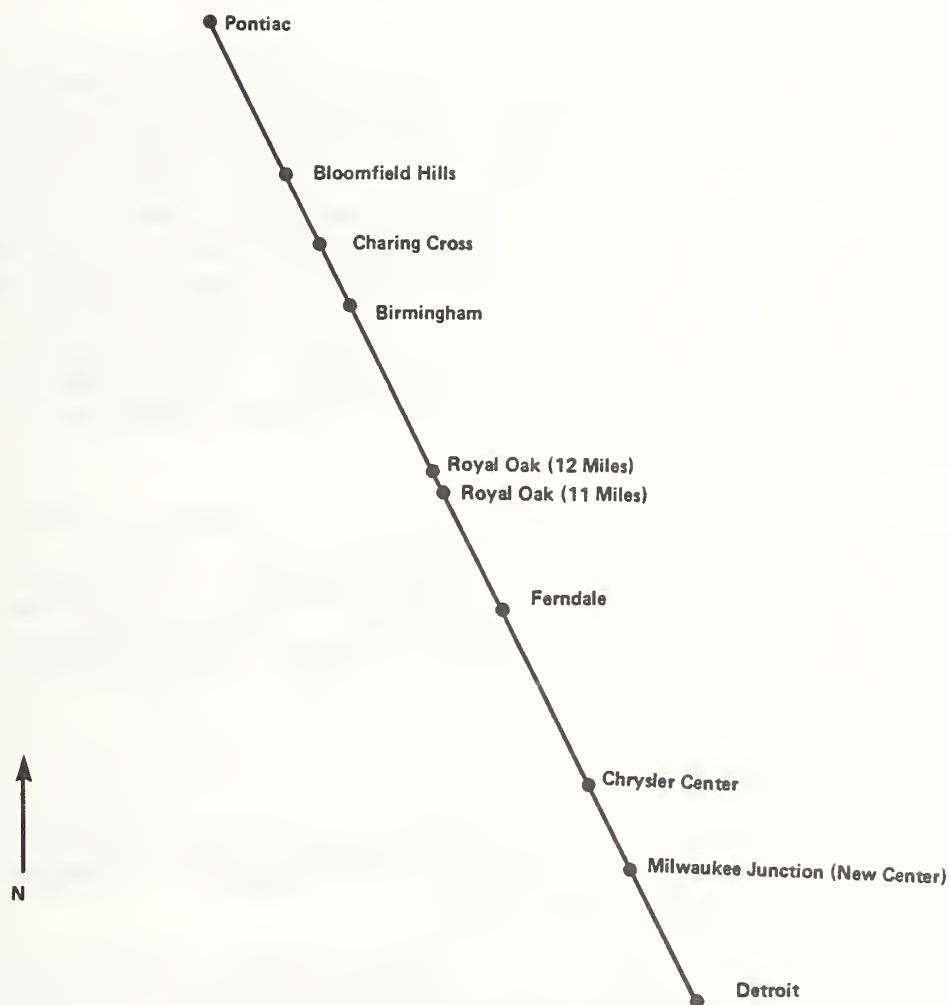
Not recovered are maintenance costs for the Pittsburgh Terminal and property taxes on the right-of-way. Maintenance-of-way costs are allocated on the basis of a unit cost per car-mile, based on a 1977 Amtrak study.* A 15-percent rate is applied to direct labor costs to estimate the costs of supervision. Beyond this, no other general or administrative costs are charged to PADOT. P&LE is also required by PADOT to keep the annual increase in operating expenses below 12.5 percent. As a result of this restriction, the limitation on acceptable cost items by PADOT, and the treatment of maintenance-of-way and general and administrative expenses by P&LE, the total operating expenses actually submitted by P&LE to PADOT for reimbursement in 1980 amounted to two-thirds of the total operating expenses resulting from the RSPO methodology.

The cost allocation method used by the P&LE to estimate its reimbursement for operating commuter rail services in Pittsburgh significantly lowers the cost burden to PADOT for funding this service. However, the limited nature of the operation is quite inefficient in terms of equipment and labor utilization. Therefore, despite the favorable cost allocation method used by P&LE, the service remains one of the most expensive commuter operations in the country.

4.6 DETROIT AREA: GRAND TRUNK WESTERN RAILROAD COMMUTER SYSTEM

The Grand Trunk Western Railroad (GTW) provides commuter rail service to the northwestern suburbs of Detroit for the Southeastern Michigan Transportation Authority (SEMTA). The system comprises 27.8 miles of right-of-way, nine stations which are owned and maintained by GTW, and one station (Birmingham) which is owned by SEMTA and maintained by GTW (see Figure 8).

* This study indicated a rate of 40 cents per car-mile for passenger-related maintenance-of-way costs. This rate is inflated to current year dollars by using a cost index developed by the Association of American Railroads.



Stations: 10
Route Miles: 27.8
System Trains Per Day (one-way): 6
Operating Railroad: Grand Trunk Western Railroad Company
Sponsoring Authority: Southeastern Michigan Transportation Authority
Note: Map Not to Scale

FIGURE 8. GTW COMMUTER RAIL SYSTEM, DETROIT AREA.

Each weekday, six one-way trains operate over the single GTW route between Pontiac and Detroit. Commuter trains share the track with GTW freight trains. Service is available in the morning and evening rush hours, with headways of 20 to 30 minutes between trains. No service is provided during non-rush hours or on weekends or holidays.

4.6.1 Equipment

The GTW operation utilizes 5 general purpose diesel locomotives and 23 serviceable passenger coaches with an average seating capacity of 82 passengers per car. Each train consists of five passenger cars and a locomotive. Due to the nature of the service schedule, three separate train sets are required for the operation, each with its own crew. SEMTA owns the commuter equipment as well as the Pontiac coach repair shop and the Detroit Terminal. GTW is responsible for maintaining SEMTA's commuter rail equipment, under the supervision of a SEMTA-appointed superintendent of rail equipment. GTW also provides equipment in case of breakdown or maintenance of SEMTA's equipment.

SEMTA is responsible for keeping an adequate inventory of materials and supplies needed to maintain and repair its commuter rail equipment at its Pontiac facility. GTW is responsible for maintaining SEMTA's locomotive fleet and keeping an ample inventory of materials and supplies not unique to the commuter operation.

4.6.2 Labor Agreements

Equipment maintenance is provided by GTW's standard union crews, as is maintenance-of-way and stations (except snow removal, which is performed by SEMTA).

A standard crew for the GTW commuter rail service consists of five persons, including an engineer, a fireman, a conductor, and two brakemen. GTW determines crew pay on the basis of both time and distance. A day's wages are based on limits of 8 hours or 100 miles for the engine crew and 9 hours or 150 miles for the train crew. Total hours of duty are limited to 12 hours a day. Overtime is paid on a time and one-half basis. No arbitrators are paid to either engine or train crew members. Only the train crew receives a monthly guarantee.

The GTW commuter operation incurs high labor costs due to the large size of the standard crew and the limited service schedule. Train and engine crews encounter a significant layover between runs, since trains operate in only one direction

during each rush-hour period. Like the P&LE commuter operation, GTW crews work split shifts extending over 11 hours per day. Within this period, the actual train running time is only two and one-half hours per round trip.

4.6.3 Operating Characteristics

Table 9 lists the major ridership, operating, and cost statistics for the GTW commuter rail system for 1980. As indicated, annual ridership was 517,461, with an average fare of \$1.00, an average passenger trip length of 15 miles, and an average vehicle loading of over 37 passengers. The system was moderately used, carrying over 18,000 passengers annually per route-mile. The total operating expenses according to the RSPO methodology were \$2.1 million, with transportation expenses representing the largest portion at 62 percent. Maintenance-of-equipment expenses amounted to 27 percent, maintenance-of-way expenses amounted to 5 percent, and general and administrative expenses amounted to 6 percent of the total operating expenses. With an average operating cost of \$4.10 per passenger, the system produced an operating ratio of over 24 percent.

4.6.4 Basis for Compensation

The current operating agreement between GTW and SEMTA is a customized contract that utilizes several cost allocation methodologies. The agreement provides for GTW to be compensated for all direct expenses incurred in providing commuter rail services and other supporting functions such as maintenance-of-equipment and maintenance-of-way. Direct costs include such items as:

- . maintenance-of-equipment labor wages;
- . train crew wages, including deadheading expenses;
- . train crew expenses for meals, lodging, and transportation;
- . utilities, plus a 10-percent surcharge for certain railroad-owned stations;
- . supplies, plus a 15-percent surcharge if issued by GTW;
- . fuel and lubricants;
- . equipment rental; and
- . professional services.

**TABLE 9. GTW COMMUTER RAIL SYSTEM CHARACTERISTICS, 1980,
DETROIT AREA.**

AGGREGATE SYSTEM STATISTICS

Route-Miles	28
Ridership	517,461
Passenger-Miles	7,761,915
Total Passenger Revenues	\$ 517,313
Train-Miles	53,040
Vehicle-Miles	207,483
Transportation Costs	\$1,310,000
Maintenance of Equipment Costs	\$ 572,000
Maintenance of Way Costs	\$ 114,000
General and Administrative Costs	\$ 125,000
Total Operating Costs	\$2,121,000

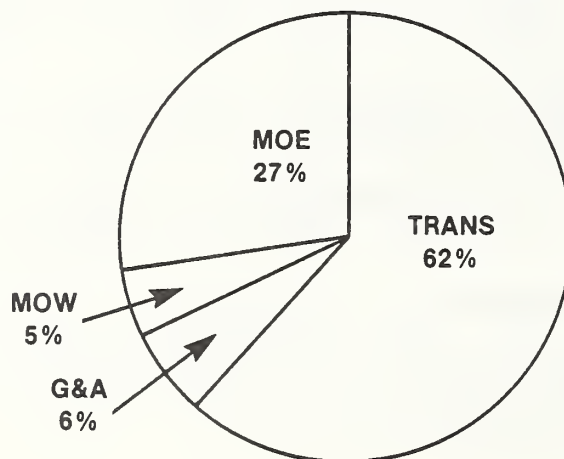
AVERAGE RIDERSHIP AND OPERATING CHARACTERISTICS

Passenger Revenues/Total Operating Costs	24.39%
Passenger Trip Length (miles)	15.00
Passenger Fare	\$ 1.00
Revenue Per Passenger-Mile	\$ 0.07
Passengers Per Route-Mile (000)	18.48
Vehicle-Miles Per Route-Mile (000)	7.41
Passenger-Miles Per Vehicle-Mile	37.41

AVERAGE UNIT OPERATING COSTS

<u>Operating Cost Categories</u>	<u>\$/Passenger</u>	<u>\$/Passenger-Mile</u>	<u>\$/Vehicle-Mile</u>	<u>Percent of Total</u>
Transportation (TRANS)	2.53	0.17	6.31	62
Maintenance of Equipment (MOE)	1.11	0.07	2.76	27
Maintenance of Way (MOW)	0.22	0.01	0.55	5
General and Administrative (G&A)	<u>0.24</u>	<u>0.02</u>	<u>0.60</u>	<u>6</u>
TOTAL	\$4.10	\$0.27	\$10.22	100%

OPERATING COST BREAKDOWN



Employee fringe benefits, supervision, and administration are determined by applying a surcharge to all direct labor wages based on the latest General Managers Association (GMA) overhead rates. Track inspection costs attributable to the commuter rail service are determined on the basis of the estimated monthly labor, materials, and related expenses incurred by the railroad for this function. Maintenance-of-way costs are determined on the basis of the number of gross ton-miles from the movement of commuter rail service locomotives, passenger coaches, and passengers. GTW is reimbursed through a fixed monthly fee for the costs of each radio installed in SEMTA locomotives which is compatible with GTW's operating frequencies. A surcharge to account for various shop overhead expenses associated with GTW equipment repair facilities is applied to the direct costs of labor when such facilities are used for SEMTA equipment. The surcharge is based on the latest GMA overhead rates. Yard switching costs are charged on a per-hour basis, accounting for crew, fuel, locomotive ownership, and locomotive repair and servicing costs. SEMTA pays a fixed annual charge of \$1,000 to GTW for use of commuter station facilities on the system.

The GTW-SEMTA agreement calls for SEMTA to pay GTW a monthly management fee covering the costs of train dispatching, signal operations, and highway grade crossing protection. This fee is developed on a train-mile basis. SEMTA also pays GTW an annual fixed fee of \$25,000 for investigation, settlement, and defense of commuter service-related claims filed against the railroad for up to a maximum of 20 claims per year. Additional claims in a calendar year are reimbursed at the rate of \$750 per claim. Major incidents resulting in more than 24 claims or inquiries are handled on a direct time and cost basis. GTW is reimbursed for costs associated with administrative personnel and expenses on the basis of a fixed monthly charge, plus the actual travel and parking expenses of the Engineer, Special Services. This charge is adjusted for changes in the wage rates of administrative personnel.

The GTW-SEMTA operating agreement is characterized by its extensive use of GMA rates for estimating overhead costs, the use of unit costs to estimate the attributable costs of specific functions, and the use of fixed costs to recover certain administrative and joint facility costs. As a result, a limited amount of operating and cost data is needed to develop the eligible costs for reimbursement by SEMTA. Due to its detail and use of the GMA overhead rates, the methodology provides for significant recovery of GTW's expenses attributable to commuter rail services. This agreement became effective on March 1, 1982, and will continue for three years until February 28, 1985.

4.7 SAN FRANCISCO AREA: SOUTHERN PACIFIC RAILROAD COMMUTER SYSTEM

The Southern Pacific Railroad (SP) provides commuter rail service to the suburban communities between San Francisco and San Jose for the California Department of Transportation (Caltrans). The system comprises 47 miles of right-of-way and 27 stations (see Figure 9) which are owned and maintained by SP. Each weekday 46 one-way trains operate over the single route system which shares the right-of-way with SP freight trains. Recently, the level of passenger traffic has begun to exceed the level of freight traffic over the line. Service is most concentrated in the morning and evening rush hours of each weekday, with minimum headways of 20 minutes to most stations. Service is also provided during off-peak periods of each weekday and on weekends and holidays, with one- to two-hour headways common.

The SP-Caltrans operating agreement restricts the commuter rail service schedule somewhat by limiting the number of east-bound trains to five between 6:31 p.m. and 5:30 a.m., and the number of westbound trains to four between 6:01 p.m. and 5:00 a.m. In addition, no more than 16 commuter trains can be scheduled between 8:00 a.m. and 4:00 p.m. These restrictions are intended to facilitate the movement of freight trains over the line and limit the potential for conflicts between freight and passenger trains.

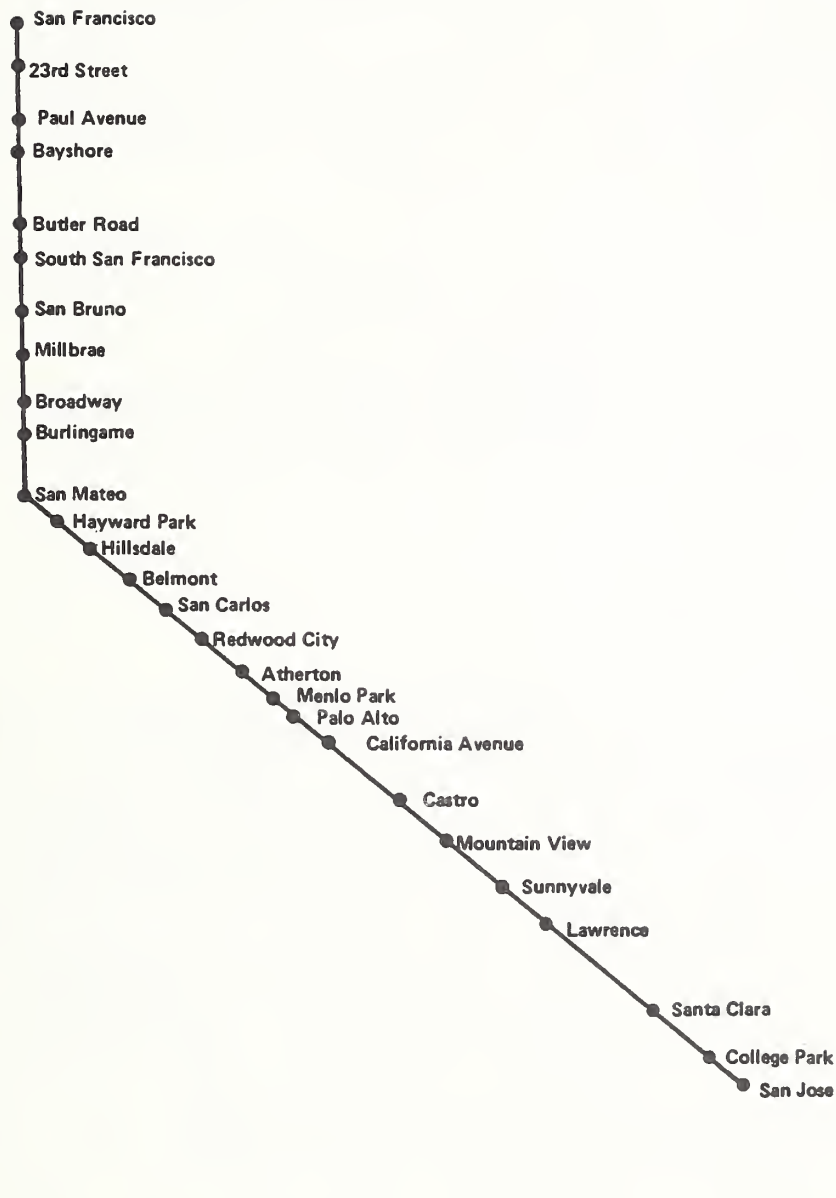
4.7.1 Equipment

The SP operation utilizes 24 diesel locomotives, 46 bilevel gallery cars with seating capacities ranging from 145 to 164 passengers per car, and 27 suburban coaches with a seating capacity of 96 passengers per car. This equipment is currently owned by SP and leased to Caltrans, with an option to purchase.

4.7.2 Labor Agreements

SP maintains the commuter rail equipment, as well as the right-of-way and stations, under contract to Caltrans, using its standard craft union workers.

SP determines operating crew pay on the basis of both time and distance. A day's wages are based on limits of 8 hours or 100 miles for the engine crew and 9 hours or 150 miles for the train crew. Total hours of duty are limited to 12 hours a day.



Stations: 27
 Route Miles: 46.9
 System Trains Per Day (one-way): 46
 Operating Railroad: Southern Pacific Transportation Company
 Sponsoring Authority: California Department of Transportation
 Note: Map Not to Scale

FIGURE 9. SP COMMUTER RAIL SYSTEM, SAN FRANCISCO AREA.

The railroad is allowed to utilize split shifts and does so because of the peak nature of the service. Employees off duty for more than 4 hours are paid standard rates for their second shift. Employees with spread time under 4 hours receive time and a one-half for their second shift. Only extra board workers are guaranteed daily wages. No monthly guarantees are provided. Passenger service crews are eligible to receive arbitraries but seldom have the opportunity to earn them. Arbitrary payments are made if an extra engine is picked up for a run, or if a train is required to deadhead the length of the route. Neither situation occurs frequently.

The SP uses a standard crew of four people: an engineer, a fireman, a conductor, and a brakeman. The standard crew is used on minimum three-car trains. An extra trainman is assigned to the crew for each additional two cars. A second conductor is added for four- and five-car trains, and a second brakeman is added for six- and seven-car trains. A seven-person crew is used on eight-car trains which are the longest commuter trains operated by SP.

4.7.3 Operating Characteristics

Table 10 lists the major ridership, operating, and cost statistics for the SP commuter rail system for 1980. As indicated, annual ridership was over 6 million persons, with an average fare of \$1.20, an average passenger trip length of over 23 miles, and an average vehicle loading of almost 59 passengers (due primarily to the use of bilevel gallery cars). The system was heavily used, carrying over 130,000 passengers annually per route-mile. The average train consist was 3.8 cars per train. The total operating expenses according to the RSPO methodology were \$16.6 million, with transportation expenses representing the largest portion at 68 percent. Maintenance-of-equipment expenses amounted to only 17 percent, maintenance-of-way expenses amounted to 5 percent, and general and administrative expenses amounted to 10 percent of the total operating expenses. With an average operating cost of only \$2.71 per passenger, the system produced an operating ratio of over 44 percent. This relatively high revenue-to-cost ratio reflects the high density of the operation and passenger demand, resulting in high passenger loadings per car. At 44 percent, the ratio was above the minimum level of 40 percent set by state law.

4.7.4 Basis for Compensation

The SP-Caltrans operating agreement incorporates basic performance standards and several cost allocation methodologies. The agreement requires that at least 90 percent of

**TABLE 10. SP COMMUTER RAIL SYSTEM CHARACTERISTICS, 1980,
SAN FRANCISCO AREA.**

AGGREGATE SYSTEM STATISTICS

Route-Miles	47
Ridership	6,112,890
Passenger-Miles	142,681,323
Total Passenger Revenues	\$ 7,360,000
Train-Miles	634,735
Vehicle-Miles	2,431,000
Transportation Costs	\$ 11,228,000
Maintenance of Equipment Costs	\$ 2,854,000
Maintenance of Way Costs	\$ 774,000
General and Administrative Costs	\$ 1,707,000
Total Operating Costs	\$ 16,563,000

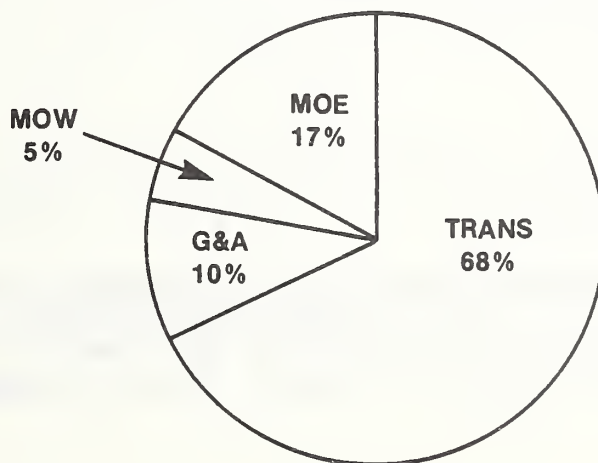
AVERAGE RIDERSHIP AND OPERATING CHARACTERISTICS

Passenger Revenues/Total Operating Costs	44.44%
Passenger Trip Length (miles)	23.34
Passenger Fare	\$ 1.20
Revenue Per Passenger-Mile	\$ 0.05
Passengers Per Route-Mile (000)	130.06
Vehicle-Miles Per Route-Mile (000)	51.72
Passenger-Miles Per Vehicle-Mile	58.69

AVERAGE UNIT OPERATING COSTS

<u>Operating Cost Categories</u>	<u>\$/Passenger</u>	<u>\$/Passenger-Mile</u>	<u>\$/Vehicle-Mile</u>	<u>Percent of Total</u>
Transportation (TRANS)	1.83	0.08	4.62	68
Maintenance of Equipment (MOE)	0.47	0.02	1.17	17
Maintenance of Way (MOW)	0.13	0.01	0.32	5
General and Administrative (G&A)	<u>0.28</u>	<u>0.01</u>	<u>0.70</u>	<u>10</u>
TOTAL	\$2.71	\$0.12	\$6.81	100%

OPERATING COST BREAKDOWN



all commuter trains complete their trips within five minutes after their scheduled arrival times at the San Francisco depot or the San Jose depot. The agreement also specifies that all equipment used in commuter service be maintained at a level that allows for at least 80 percent of the equipment to be available for service at any time.

The agreement specifies 22 categories of costs which are directly related to the operation of commuter rail services and are thus eligible for reimbursement by SP. These are summarized as follows:

- . direct payroll for operating and maintenance crews;
- . employee health and welfare benefits, calculated on the basis of total labor costs by service type;
- . fuel, calculated on the basis of actual expenses for fuel used in commuter service operations and on the percentage of yard switching hours devoted to commuter trains while in the San Francisco, San Jose, and Oakland yards;
- . commuter service advertising;
- . publishing and printing of timetables, tariffs, and passenger service tickets relating to commuter services;
- . depreciation of passenger yard shop and power plant machinery;
- . locomotive maintenance, calculated on the basis of locomotive unit miles and limited to the adjusted levels of costs experienced by SP in 1979 for the first three years of the contract;
- . equipment maintenance, calculated on a direct cost basis and limited to the adjusted levels of costs experienced by SP in 1979 for the first three years of the contract;
- . utilities;
- . supplies; and
- . professional services.

The general expenses incurred for administering the commuter rail service by personnel within SP's general offices are calculated on the basis of 6 percent of the sum of all directly determined operating expenses listed above. Common expenses

incurred by SP which cannot be readily assigned to either freight or passenger services are calculated on the basis of 12 percent of the sum of all directly determined operating expenses listed above. In addition, an operating margin is provided which amounts to 4 percent of the sum of all directly determined operating expenses, general expenses, and common expenses. A fee of 8 cents per passenger is also provided as an incentive to attract ridership. To these expenses are added the costs of applicable federal payroll, state sales, and local (San Francisco payroll tax) taxes, plus equipment and facility rental, maintenance-of-way expenses, and liability costs.

The equipment used in the service is leased to Caltrans by SP, with an option to purchase. The equipment is dedicated to the commuter operation under this arrangement. As a contribution to the public good, SP foregoes the rental payments on locomotives used in commuter service for the first five years of the agreement and the rental payments on passenger cars used in commuter service for the first three years of the agreement.

The agreement specifies a fixed cost of \$559,000 per year for the use and routine maintenance of all fixed facilities, including track. This amount is acknowledged to be below actual costs and reflects another contribution to the public good.

The agreement reimburses SP a fixed annual amount for the costs associated with SP's assumption of the liability and responsibility for commuter service-related injury and damage claims. The amount begins at \$400,000 per year for the first five years of the agreement and increases to \$600,000 for each of the second five years of the agreement. During the initial five years of the agreement, SP contributes \$400,000 annually to the public good in the form of a deduction to its total operating expenses incurred in providing commuter rail services.

The agreement also includes provisions for SP and Caltrans to share equally the costs of all capital improvements to the right-of-way, with Caltrans being solely responsible for the capital costs of commuter service equipment, stations, and facilities.

The SP-Caltrans agreement regarding reimbursable expenses can be summarized as follows:

- . Direct costs of transportation and maintenance-of-equipment functions: 100 percent assignment to Caltrans;
- . General and administrative costs: 6 percent of direct operating costs;
- . Common costs: 12 percent of direct operating costs;

- . Operating margin: 4 percent of direct, general, and common costs;
- . Incentive fee: 8 cents per passenger;
- . Maintenance-of-way: Fixed rate of \$559,000;
- . Taxes: Attributable allocation;
- . Equipment and station rental: Fixed cost per vehicle and station;
- . Liability: Fixed rate of \$400,000 (\$600,000 in years 6 to 10 of the agreement);
- . Capital costs/track: 50 percent allocation to Caltrans; and
- . Capital costs/commuter service equipment, stations, and facilities: 100 percent allocation to Caltrans.

These compensation provisions serve several purposes for both SP and Caltrans. The simplified reimbursement of common and general expenses and of maintenance-of-way costs eases the data requirements on the accounting staff of the SP while providing inflow of subsidy money based on direct costs associated with the transportation and maintenance-of-equipment functions. Caltrans benefits from the reduced cost charged for maintenance-of-way by the SP as well as the reduced accounting needs of the simplified allocations. While the negotiations leading to this agreement were lengthy, the approach eliminated the need to perform detailed analyses of common cost components, to establish the cost and service relationships required for proportional costing, and to determine what costs are avoidable, given the cessation of service. The result is a simplified costing methodology whose results closely compare with the costs identified by the RSPO methodology, while permitting the SP to designate certain expenses as a contribution to the public good. This agreement became effective on July 1, 1980, to continue for ten years.

5. COMPARISON OF COMMUTER RAIL SYSTEMS

This section presents a comparative analysis of the seven commuter rail systems described in Section 4, based on their 1980 system, operations, revenue and cost statistics.

5.1 RIDERSHIP AND OPERATING CHARACTERISTICS

Figures 10A and 10B compare the primary ridership and operating characteristics of the seven commuter rail systems. In terms of operating ratio, the seven systems cluster into three distinct groups according to the top left chart in Figure 10A. The Long Island, Washington, D.C., and San Francisco systems have an average operating ratio of around 45 percent, while the Boston, Pittsburgh (B&O), and Detroit systems average around 22 percent. The P&LE system in Pittsburgh displays the lowest operating ratio at 10 percent. These differences reflect the high density operations and ridership of the Long Island and San Francisco systems, the high fare structure of the Washington, D.C. system, and the lower operations and passenger density of the Boston, Pittsburgh (B&O and P&LE), and Detroit systems, as illustrated in the two charts at the top of Figure 10B.

The average passenger trip length, shown in the top right chart in Figure 10A, is essentially a function of system design, in terms of total route-miles and number of routes. The Long Island, Washington, D.C., and San Francisco systems have the longest trip lengths, while the Pittsburgh (B&O) and Detroit systems have the shortest trip lengths.

The revenue intensity of each system is compared in the two charts at the bottom of Figure 10A. As indicated, the Washington, D.C. system has the highest average fare. The other six systems are relatively close in terms of passenger revenues per passenger-mile.

The lower chart in Figure 10B indicates the average number of passengers per vehicle for each commuter system. The chart indicates that the San Francisco system exhibits the highest density of passenger occupancy, due to the higher capacity of the equipment used and the greater ridership demand. The Pittsburgh system operated by the B&O Railroad displays the lowest level of vehicle occupancy.

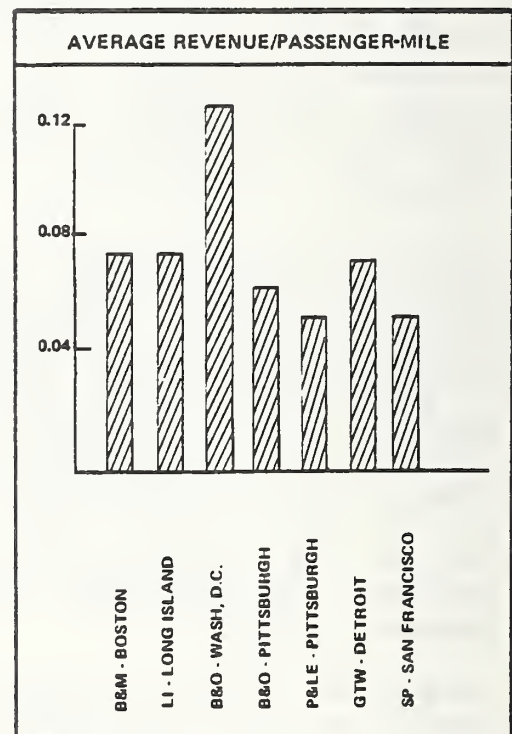
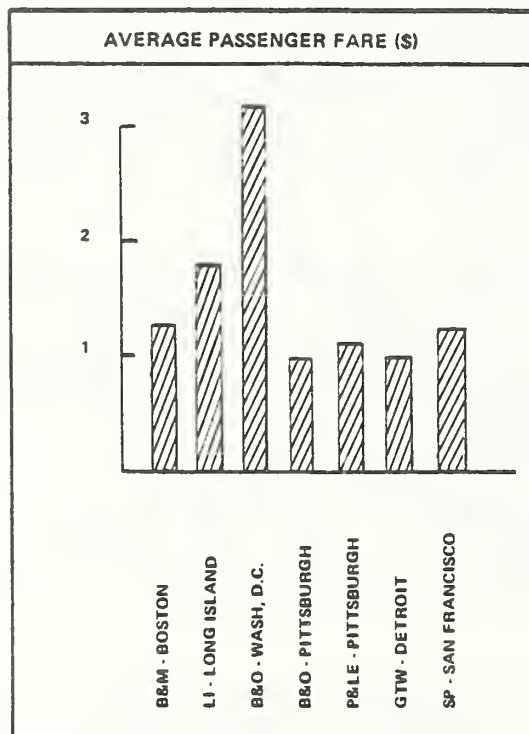
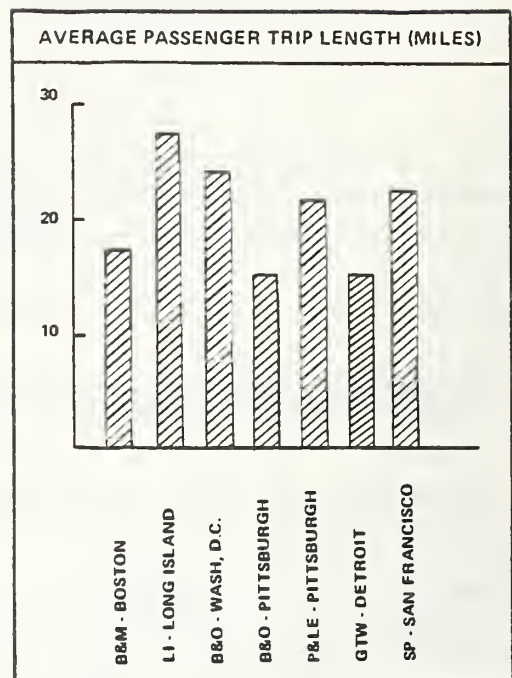
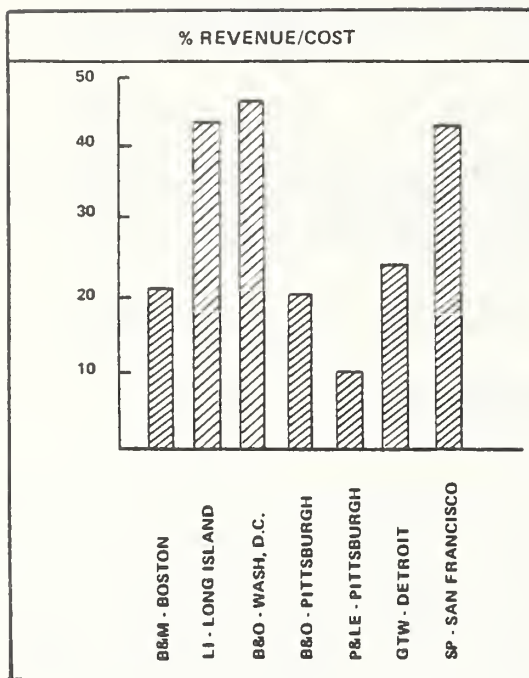


FIGURE 10A. COMPARISON OF RIDERSHIP AND OPERATING CHARACTERISTICS BY SYSTEM, 1980.

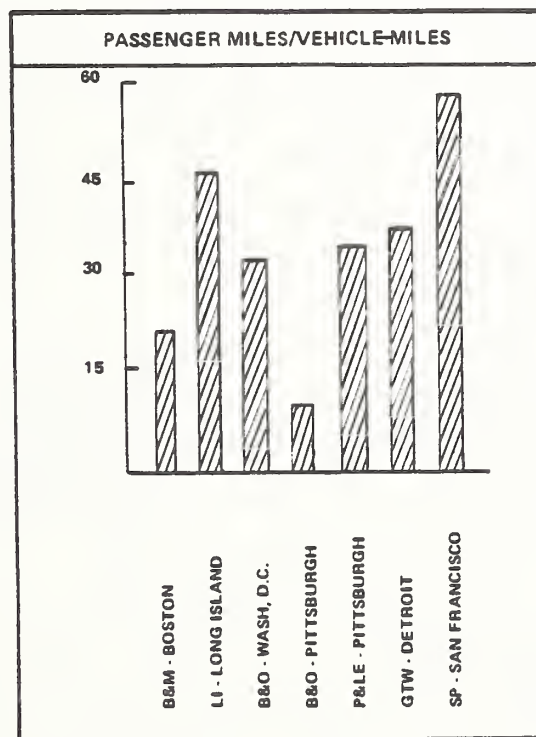
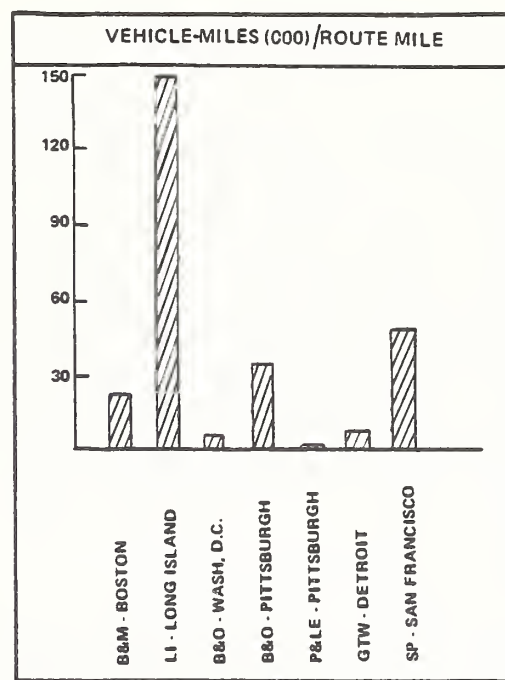
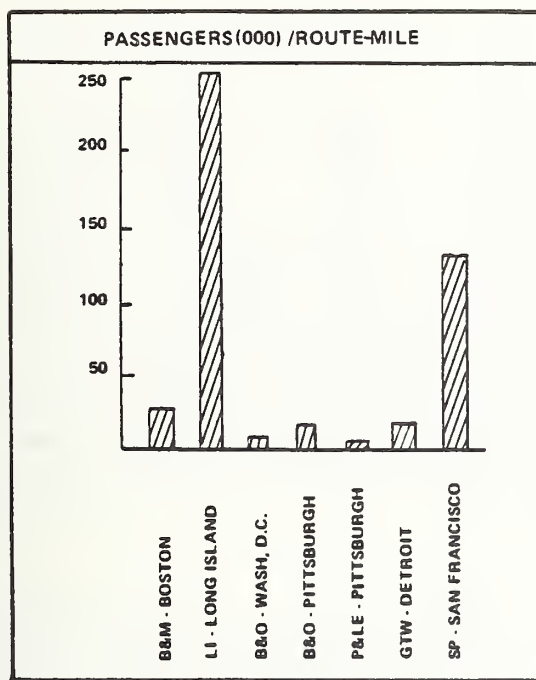


FIGURE 10B. COMPARISON OF RIDERSHIP AND OPERATING CHARACTERISTICS BY SYSTEM, 1980.

5.2 UNIT OPERATING COSTS

Figures 11 through 15 illustrate the average unit costs for each system by major expense category. Figure 11 compares the average unit transportation costs by system. As indicated, the Pittsburgh operation by the P&LE Railroad is the most costly on a unit basis, and the Washington, D.C., and Detroit systems are also somewhat high. Since labor makes up the major portion of the transportation expenses, the four- and five-person crews and long layover periods of these systems makes the unit transportation costs disproportionately higher. The Long Island system, with its extensive operation and favorable labor arrangements, produces the lowest unit transportation costs. Transportation costs exceed 44 percent of the total operating costs for each of the systems, representing the largest category of cost for each system.

Figure 12 compares the average unit maintenance-of-equipment costs by system. The charts indicate that the Boston, Washington, D.C., and Pittsburgh (P&LE) systems are most costly in terms of unit equipment maintenance. Since these data were collected in 1980, the Boston and Washington, D.C., systems have improved the condition of their fleets by either acquiring new equipment or refurbishing existing equipment. This should improve cost performance in terms of equipment maintenance. The Long Island and San Francisco systems exhibit the lowest unit maintenance-of-equipment costs, due in part to the LI Rail Road's use of cost-efficient electric equipment and the SP's maintenance of its equipment at a normalized level. For most of the systems, maintenance-of-equipment costs represent from 20 to 30 percent of total operating costs.

Figure 13 compares the average unit maintenance-of-way costs by system. The Boston and Long Island systems incur the highest level of unit maintenance-of-way costs, due to the predominant use of their rights-of-way by passenger operations. As the major user of these systems, commuter operations are allocated a higher percentage of total maintenance-of-way costs than the commuter operations of other systems whose predominant service is freight. The high unit cost for the Long Island system could also result from the upkeep required by the electrified facilities along its route structure. Also contributing to the high unit maintenance-of-way costs for the Boston and Long Island systems is the fact that the authorizing agency owns the right-of-way, either directly, as in the case of Boston, or indirectly, as in the case of Long Island. Whereas total operating expenses represented by maintenance-of-way costs average 20 percent for the Boston and Long Island systems, they average about 5 percent for the remaining systems.

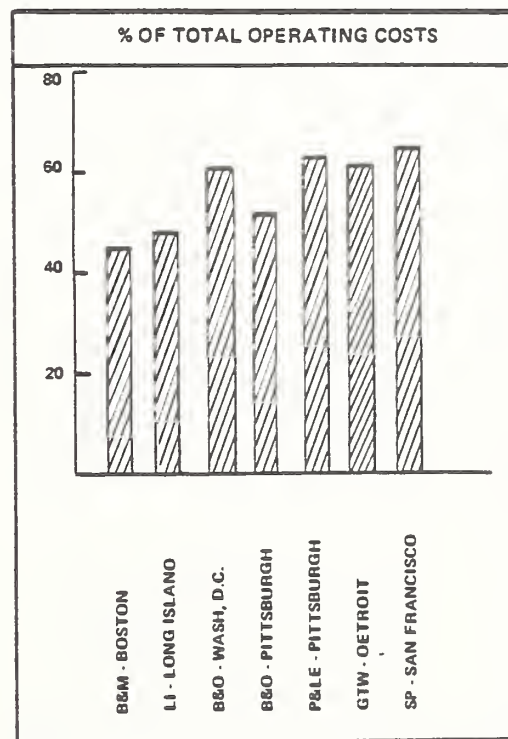
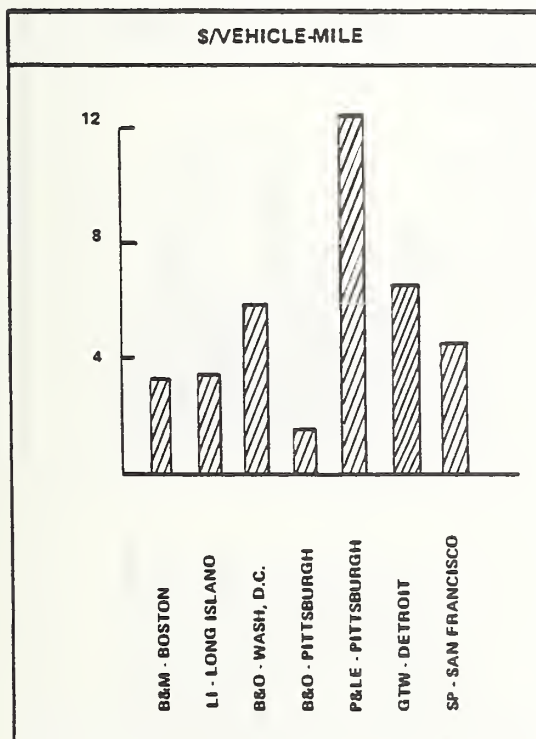
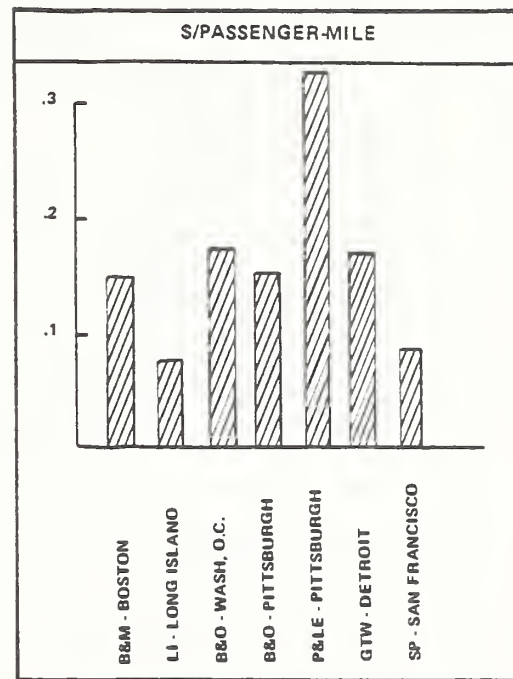
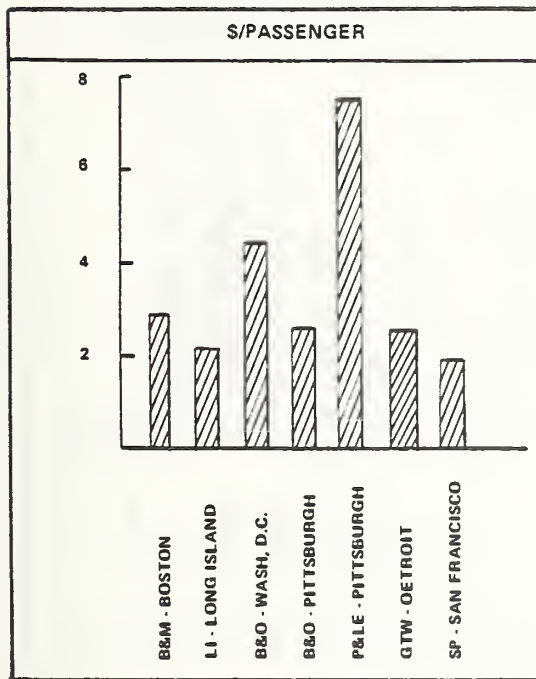


FIGURE 11. COMPARISON OF AVERAGE UNIT TRANSPORTATION COSTS BY SYSTEM, 1980.

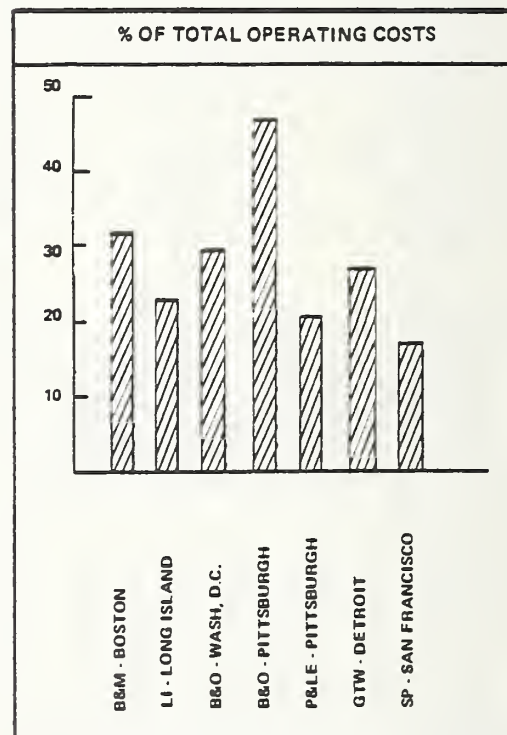
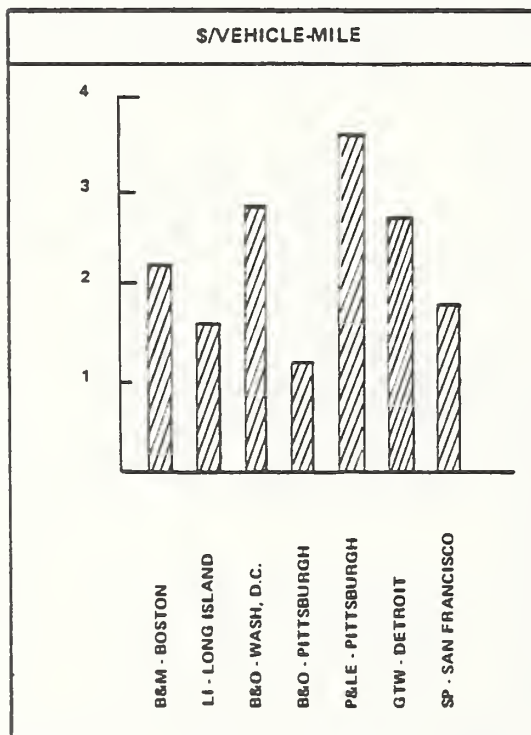
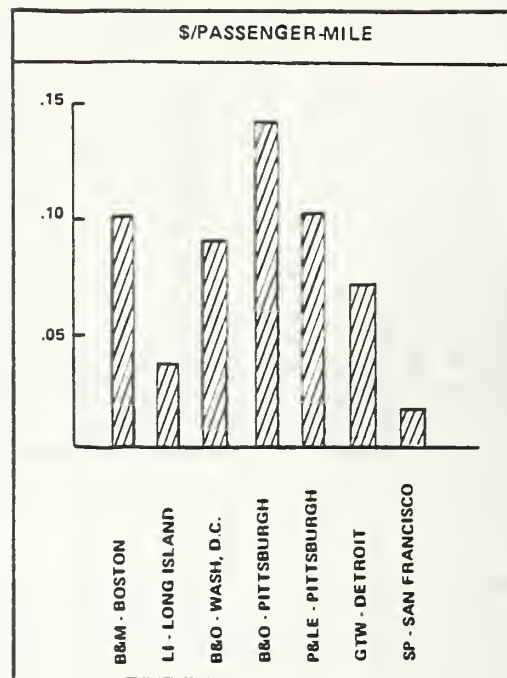
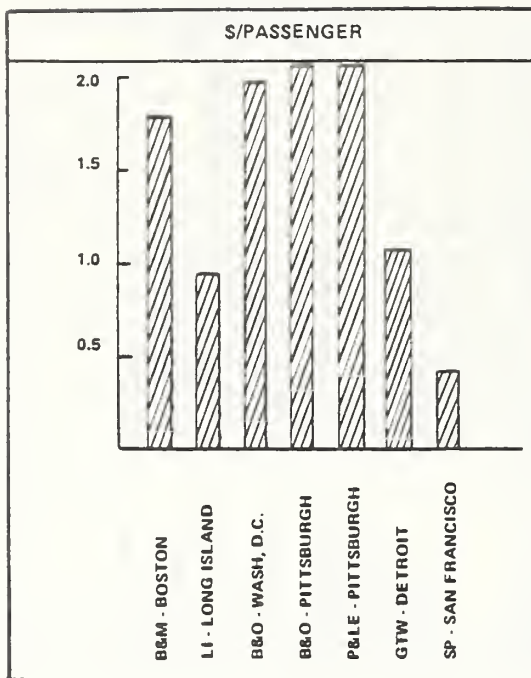


FIGURE 12. COMPARISON OF AVERAGE UNIT MAINTENANCE-OF-EQUIPMENT COSTS BY SYSTEM, 1980.

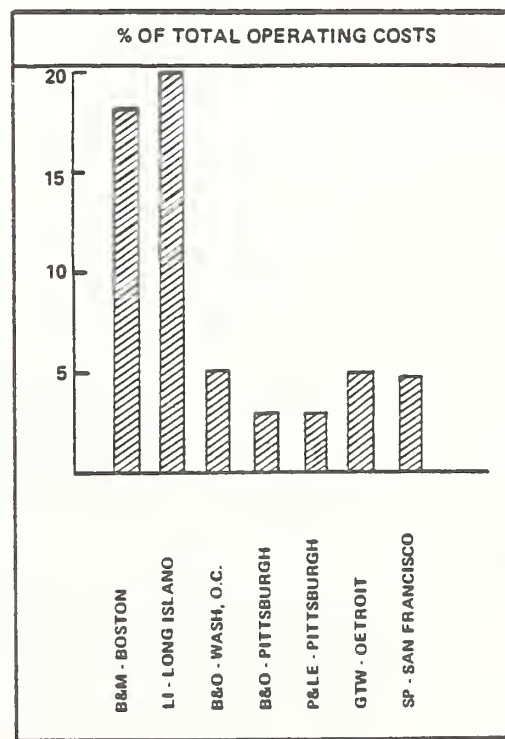
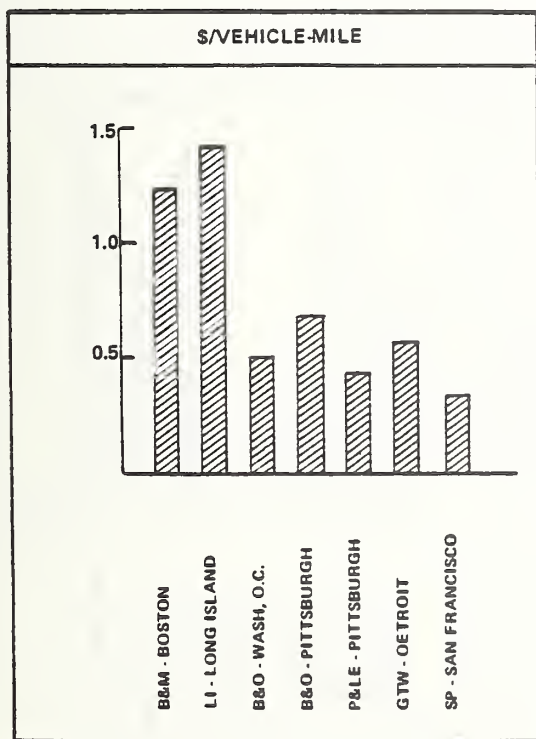
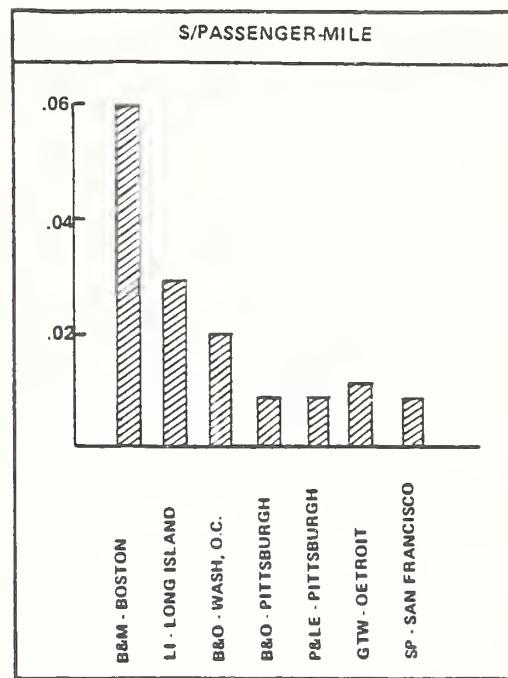
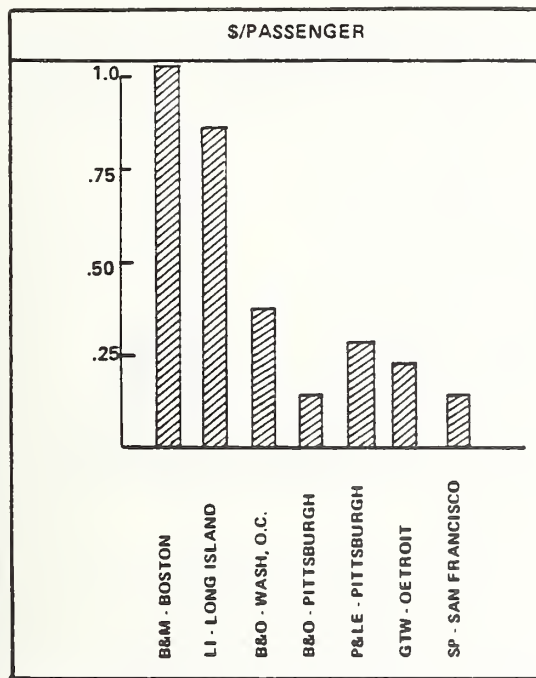


FIGURE 13. COMPARISON OF AVERAGE UNIT MAINTENANCE-OF-WAY COSTS BY SYSTEM, 1980.

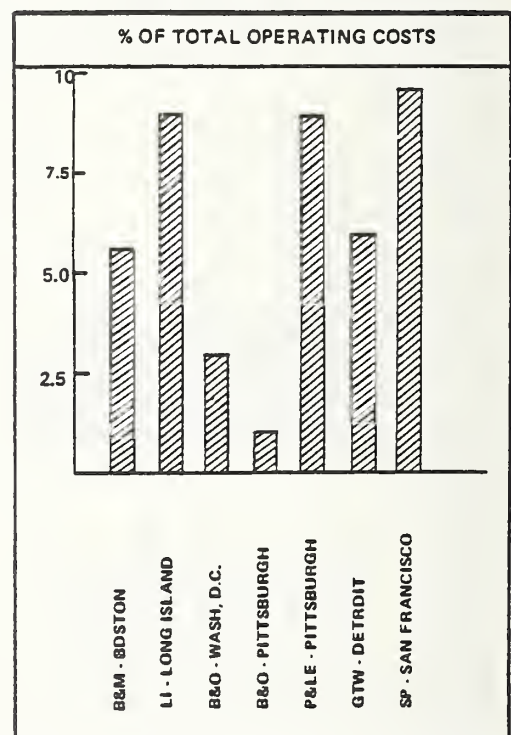
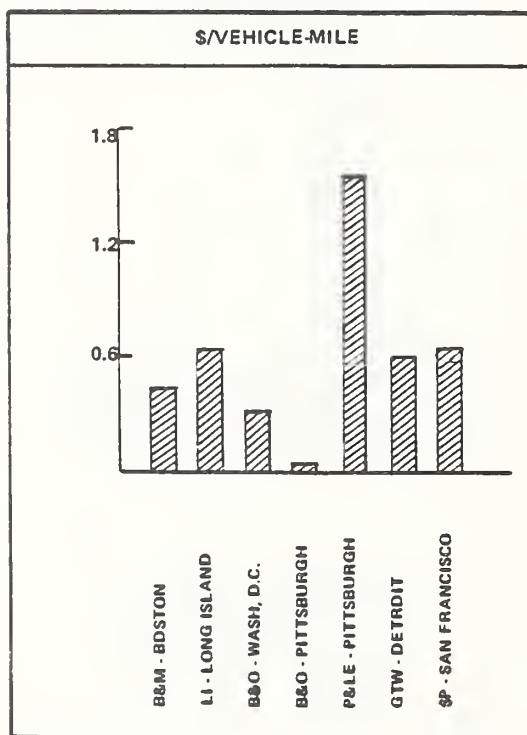
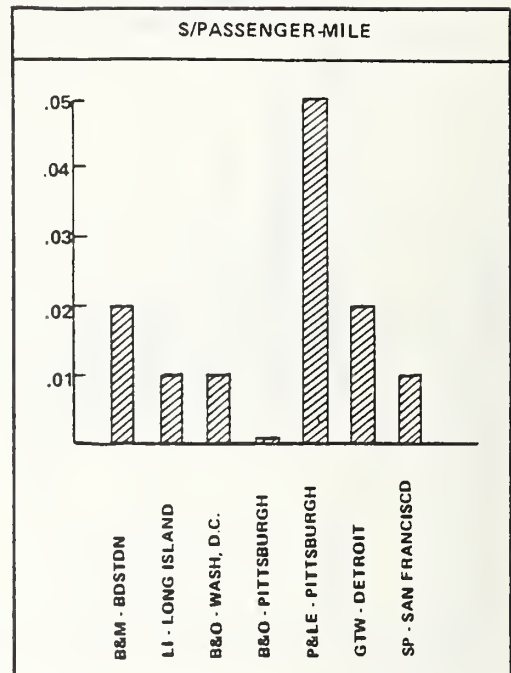
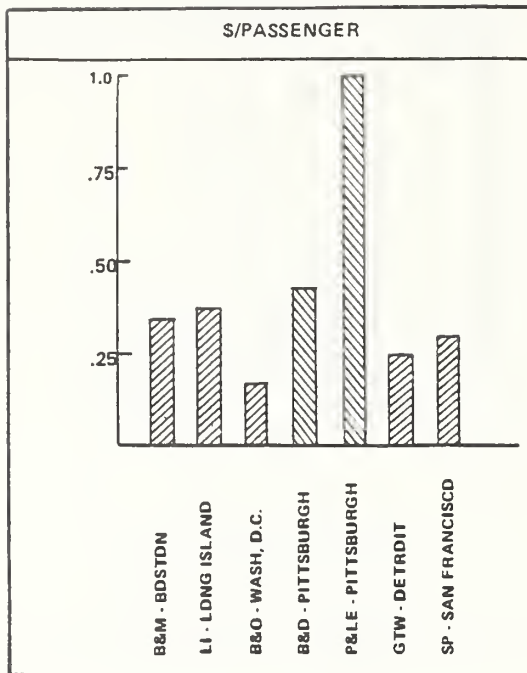


FIGURE 14. COMPARISON OF AVERAGE UNIT GENERAL AND ADMINISTRATIVE COSTS BY SYSTEM, 1980.

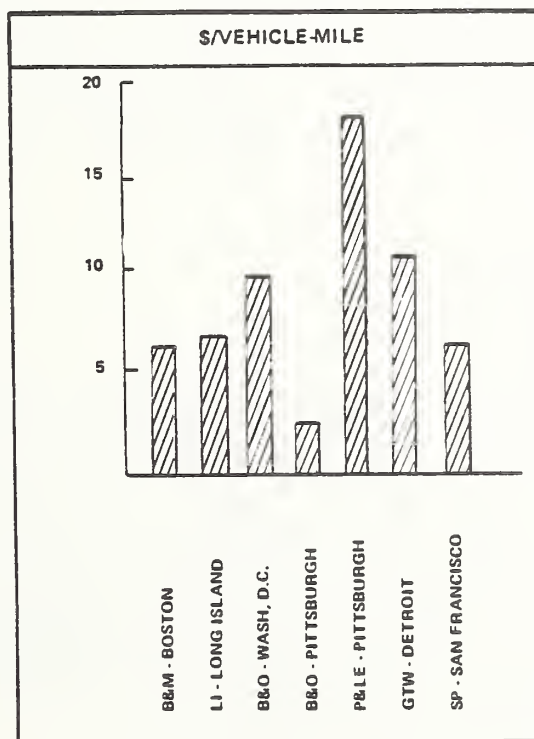
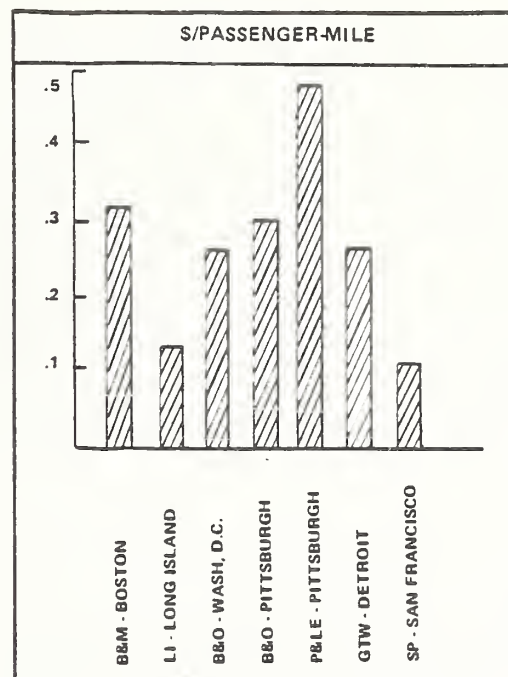
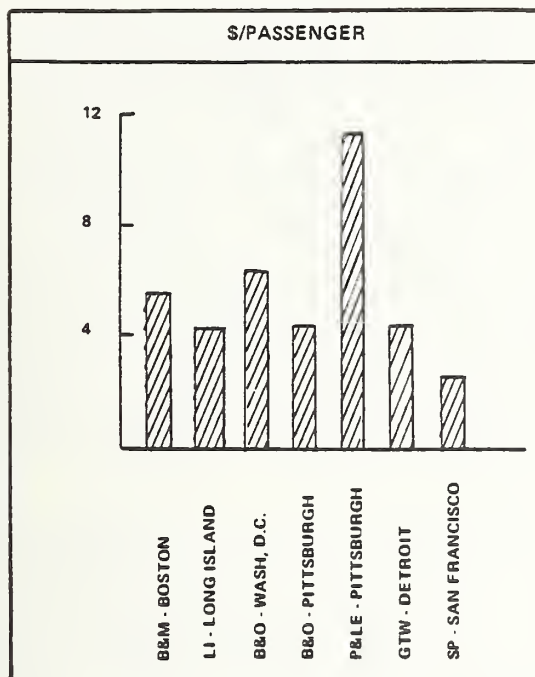


FIGURE 15. COMPARISON OF AVERAGE UNIT TOTAL OPERATING COSTS BY SYSTEM, 1980.

Figure 14 compares the average unit general and administrative costs by system. The Pittsburgh operation by the P&LE Railroad incurs the highest unit costs, due primarily to the very low level of operations. The two commuter operations of the B&O Railroad in Washington, D.C., and Pittsburgh exhibit the lowest unit costs for general and administrative functions, and the lowest percentage of total operating costs ranging from 1 to 3 percent. The Long Island, Pittsburgh (P&LE), and San Francisco systems devote the highest percentage of total operating costs to this category, averaging around 9 percent. The dispersion of percentages of total operating costs represented by general and administrative costs reflects the differences in methods and assumptions used by individual railroads in allocating these costs, which comprise the largest proportion of common costs of the four cost categories studied.

Figure 15 compares the average unit total operating costs by system. Once again, the P&LE operation in Pittsburgh incurs the highest unit costs due to its limited operations and restrictive labor arrangements. The Long Island and San Francisco systems are most cost effective, due to their intensive operations and their ridership density. While the B&O operation in Pittsburgh exhibits the lowest total operating costs per vehicle-mile, the low vehicle occupancy level described earlier precludes the system from achieving comparable results in terms of overall profitability (as measured by the operating ratio and costs per passenger-mile).

5.3. COMPENSATION METHODS

Each of the seven commuter systems analyzed in this report, with the exception of the Long Island system, has a different methodology for reporting attributable costs of freight and passenger operations to the ICC and for estimating the reimbursable costs of providing commuter rail services. The various compensation methods used for each system are summarized in Table 11. The differences among the methodologies reflect the results of negotiations between the operating railroads and the authorizing agencies, the ownership arrangements regarding the rights-of-way and equipment, and the predominant services using the rights-of-way.

The major difference among systems involves the use of avoidable versus attributable cost allocation methods. The attributable cost allocation method is used primarily on systems where passenger service represents the significant user of the right-of-way. This includes such systems as Boston, Long Island, and San Francisco. This methodology tends to

TABLE 11. COST ALLOCATION METHODS BY COMMUTER RAIL SYSTEM.

System	Primary Compensation Methods
B&M/Boston	<ul style="list-style-type: none"> - Attributable Cost Allocation - Fixed Percent General and Administrative Overhead - Fixed Management Fee and Liability Fund - Service Performance Incentives and Offsets - Ridership Level Incentives
LI/Long Island	<ul style="list-style-type: none"> - RSPO Cost Allocation (primarily attributable cost allocation)
B&O/Washington, D.C.	<ul style="list-style-type: none"> - Avoidable Cost Allocation - Fixed General and Administrative Fee
B&O/Pittsburgh	<ul style="list-style-type: none"> - Avoidable Cost Allocation - GMA* Overhead Rates for General and Administrative Costs - Service Performance Penalties - Equipment Maintenance Penalties
P&LE/Pittsburgh	<ul style="list-style-type: none"> - Avoidable Cost Allocation - Fixed Percent Supervisor Overhead
GTW/Detroit	<ul style="list-style-type: none"> - Variable Cost Allocation - GMA* Overhead Rates for General and Administrative Costs - Fixed Liability Fee and Station Use Charge
SP/San Francisco	<ul style="list-style-type: none"> - Attributable Cost Allocation - Fixed Percent General and Administrative Costs - Fixed Percent Common Costs - Fixed Percent Management Fee - Ridership Level Incentives - Fixed Maintenance-of-Way Fee - Below Value Equipment and Station Rental Costs - Fixed Liability Fee

* GMA - General Managers Association

assign more of the total operating costs to the commuter service than the avoidable cost method, since more expense categories are involved in the allocation. The commuter systems which share predominantly freight-carrying lines tend to use the avoidable cost allocation method. This method reduces the complexity of performing the cost allocation by assigning certain categories of joint costs to the predominant user, similar to the priority-of-use cost allocation method. Systems using the avoidable cost method include Washington, D.C., Pittsburgh (B&O), and Pittsburgh (P&LE).

The only system which makes significant use of the variable cost allocation method is the Detroit system. The Detroit operating agreement develops numerous unit costs to estimate the commuter service costs associated with such functions as train dispatching, yard switching, maintenance-of-way, signal operation, and grade crossing protection. Each unit cost relates a set of operating expenses to a specific level of output as measured by a particular operating statistic. The lack of more widespread application of this method reflects the difficulty of developing meaningful proportional cost relationships which can be agreed to by both operator and authorizing agency, and the apparent preference of authorizing agencies for cost documentation that better reflects actual expenditures.

Another major difference among the compensation methods involves the treatment of general and administrative costs. Several commuter service contracts rely on railroad overhead rates developed by the General Managers Association (GMA). This method eliminates the need for extensive data collection, special studies, and continuous updating to determine the actual costs associated with employee fringe benefits, supervision, and other general and administrative expenses. Instead, industry-based percentage overhead rates are applied to direct labor expenses by major function to estimate these costs. The rates are provided by an independent third-party source and are updated quarterly. Their use is evident in the operating contracts of the Pittsburgh (B&O) and Detroit systems. Other systems use fixed overhead rates to recover general and administrative costs, supervision costs, common costs, or management fees. These include Boston, Pittsburgh (P&LE), and San Francisco. Like the GMA overhead rates, fixed overhead rates are simple to apply.

The use of fixed fees for certain cost categories is evident in the operating agreements of the Boston, Washington, D.C., Detroit, and San Francisco systems. Fixed fees typically are used for cost categories which are not directly related to the level or amount of service provided in the short term. These include management fees and liability costs associated with damage and injury claims. In several cases, minimal fixed

charges are used as a method of assigning token value to a certain function which is provided for the public good. For example, the Detroit system compensates GTW in this fashion for the use of railroad-owned stations, and the San Francisco system compensates SP in this fashion for maintaining the right-of-way.

Recent innovations in the development of compensation for commuter rail operators are ridership and performance incentives. These are financial incentives provided to commuter rail operators for exceeding certain predetermined levels of ridership or service as measured by specific criteria. Both Boston and San Francisco have ridership incentives calculated on the basis of ridership above a certain historic level (Boston) or actual ridership (San Francisco). Boston also provides for financial incentives for exceeding certain service standards which measure on-time performance and equipment availability. In addition, the Boston agreement stipulates financial penalties or offsets for performance which is below certain service limits for on-time performance and equipment availability. The PAT agreement with the B&O specifies only financial penalties for noncompliance with prescribed minimum equipment maintenance and service performance standards. The San Francisco agreement stipulates a minimum standard for on-time performance but fails to assign a financial reward or penalty for either exceeding or not reaching the standard.

6. FINDINGS AND CONCLUSIONS

The cost to public agencies of funding commuter rail service varies significantly among rail systems. These variations can be attributed to:

- . the differences in railroad labor agreements currently in effect;
- . the scale of train operations and ridership demand;
- . the age, condition, and capacity of equipment;
- . the ownership of right-of-way and equipment; and
- . the methods used to allocate common costs as stipulated in the operating agreements between railroad and authorizing agency.

Some of these costs are beyond the immediate control of authorizing agencies sponsoring commuter rail services. However, the cost of commuter rail services can be reduced by modifying labor arrangements, refurbishing existing equipment or buying new equipment, instituting performance and ridership incentives, and establishing more favorable cost allocation arrangements. In addition, many of the productivity improvement techniques successfully developed under the SMD Program for conventional transit systems may be applicable to commuter rail.

Cost savings resulting from advantageous labor agreements are apparent in the operating statistics presented in Section 4 of this report. Reductions in transportation cost per vehicle-mile are reported by the LI Rail Road due to the elimination of mileage limits to a day's work and the extensive use of electric power for train operation. The B&M also reports operating cost savings by reducing manning requirements from a four-person base crew to a two-person base crew and by negotiating the relaxation of some maintenance work rules. In contrast, the MBTA attributes its higher maintenance costs to the poor condition of equipment and right-of-way that existed when the system was originally purchased from the B&M and Conrail. The problem of previously deferred maintenance has kept these costs higher for several years despite improvements in labor productivity and management controls.

The limited commuter operations provided by the P&LE Railroad in Pittsburgh and the GTW Railroad in Detroit prevent these commuter systems from efficiently utilizing their operating crews under traditional railroad work rules. These systems, which operate commuter rail service strictly during the

rush-hour periods, pay significant overtime to their operating crews under these work rules. To reduce these costs, service levels would have to be expanded significantly or existing labor agreements would have to be modified by such methods as:

- . reducing the size of the crew;
- . instituting split shift arrangements for operating crews with wages based solely on time worked;
- . eliminating arbitraries and constructive allowances; and/or
- . adjusting commuter service wage rates to parallel more closely the wages paid to transit workers with comparable responsibilities.

The labor costs associated with the maintenance-of-equipment function might be reduced by consolidating the responsibilities of several crafts under a single "composite" mechanic. Using "unit exchange" arrangements with equipment manufacturers or contracting for certain specialized maintenance functions might also help the operator control maintenance costs, especially for smaller systems which cannot take advantage of certain economies of scale.

Deteriorated equipment can cost more to maintain than equipment which is new or newly refurbished. Many authorizing agencies are purchasing their own commuter equipment, whether new or refurbished, in order to try to control these costs and ensure consistently reliable and amenable service. The use of agency-owned equipment, particularly locomotives, ensures its availability for commuter service and simplifies the treatment of cost responsibility when maintenance-of-equipment costs, equipment operating costs, and equipment capital costs are being allocated between freight and passenger services.

Differences in maintenance-of-way costs result primarily from the nature of right-of-way ownership. Both the Boston and Long Island commuter rail systems incur higher unit maintenance-of-way costs than the other systems studied because the authorizing agency owns the right-of-way in both cases, and passenger services represent the predominant user of the right-of-way. The cost allocation methods used by these two systems assign a higher percentage of maintenance-of-way costs to the commuter service than to the freight service. The remaining systems assign a lower percentage of the maintenance-of-way costs to the commuter service, sometimes as low as zero.

The advent of performance and ridership incentives in commuter rail service operating agreements is an attempt to relate the railroad operator's compensation level to the quality of service provided. As the intermediary between the passenger

and the authorizing agency, the railroad operator influences the passenger's perception of commuter service. Performance incentives encourage the railroad operator to improve the service quality to the passenger so that more passengers will utilize the service. If this occurs, the railroad may also receive a ridership incentive. Performance offsets or penalties for less-than-acceptable service guard against the railroad's performing only caretaker services, without regard for service quality and passenger satisfaction.

The choice of cost allocation methodology is a major facet of the operating agreement negotiations. The outcome of these negotiations is highly dependent on the operating characteristics of the system and the strength of the bargaining positions of those involved in the negotiations. It is thus imperative that the authorizing agency entering into such negotiations be familiar not only with the issues involved but also with the specific characteristics of the commuter rail system, existing railroad labor agreements, track and equipment conditions, ridership profile, operating constraints, and funding limitations. This information will allow the agency to negotiate with a better understanding of the potential costs, savings, and risks involved in any course of action.

The selection of cost allocation techniques is influenced by the relative scope of the commuter rail service in comparison to other rail services sharing the facilities. Avoidable cost techniques are usually the most advantageous to an authorizing agency, in that the commuter service is normally the secondary user of the facilities and thus is responsible for a smaller amount of common costs than if expenses were split with an attributable or variable cost allocation method. Contracts specifying avoidable costs are more difficult to obtain and are usually acceptable to railroads only when the commuter rail portion of traffic is quite small in relation to other rail traffic.

Attributable and variable cost allocation methods are much more likely to be acceptable to operating railroads. This becomes particularly true as the magnitude of commuter service approaches that of other rail services. An authorizing agency should expect to pay a more equal share of common costs as these magnitudes equalize. Similarly, when commuter rail is the dominant user of a facility, an agency should be prepared to deal with railroads desiring an avoidable cost allocation methodology, with freight service as the secondary service. Such a methodology will cause the commuter system to absorb the greater portion of common costs in such cases.

The choice between avoidable, attributable, or variable cost allocation methods, as well as fixed payments or other compensation techniques, is often influenced by the availability of data. These cost allocation procedures, theoretically, can

result in similar final costs, although the outcome is dependent on the negotiation process. Therefore, if the negotiations do not reveal cost advantages for any particular method, the appropriate technique is whatever procedure requires the least additional effort to implement and maintain. For example, a previously performed variable cost study may serve as an acceptable basis for a variable cost allocation procedure. Such an approach would limit the need for new studies and simplify the calculation of costs assigned to commuter rail services. Seldom is any one cost allocation methodology used exclusively in an operating agreement. Most agreements use combinations of the major cost allocation methodologies discussed in this report.

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ANNUAL REPORT FORM R-1:
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APPENDIX B
RAILROAD OPERATING EXPENSE ACCOUNTS

410. RAILWAY OPERATING EXPENSES

State the railway operating expenses on respondent's road for the year, classifying them in accordance with the Uniform System of Accounts for Railroad Companies, and allocate the common operating expenses in accordance with the Commission's rules governing the separation of such expenses between freight and passenger services.

Line No.	Name of railway operating expense account (a)	Freight						Passenger (g)	Total (h)
		Salaries and wages (b)	Material, tools, supplies, fuels, and lubricants (c)	Purchased services (d)	General (e)	Total freight expense (f)			
		\$	\$	\$	\$	\$	\$	\$	\$
	WAY AND STRUCTURES:								
	ADMINISTRATION:								
1	Track								
2	Bridge and Building								
3	Signal								
4	Communication								
5	Other								
	REPAIR AND MAINTENANCE:								
6	Roadway - Running								
7	Roadway - Switching								
8	Tunnels and Subways - Running								
9	Tunnels and Subways - Switching								
10	Bridges and Culverts - Running								
11	Bridges and Culverts - Switching								
12	Ties - Running								
13	Ties - Switching	N/A		N/A	N/A				
14	Rail - Running	N/A		N/A	N/A				
15	Rail - Switching	N/A		N/A	N/A				
16	Other Track Material - Running	N/A		N/A	N/A				
17	Other Track Material - Switching	N/A		N/A	N/A				
18	Ballast - Running	N/A		N/A	N/A				
19	Ballast - Switching	N/A		N/A	N/A				
20	Track laying and surfacing - Running								
21	Track laying and surfacing - Switching								
22	Road Property Damaged - Running								
23	Road Property Damaged - Switching								
24	Road Property Damaged - Other								
25	Signals and Interlockers - Running								
26	Signals and Interlockers - Switching								
27	Communications Systems								
28	Electric Power Systems								
29	Highway Grade Crossings - Running								
30	Highway Grade Crossings - Switching								
31	Station and Office Buildings								
32	Shop Buildings - Locomotives								
33	Shop Buildings - Freight Cars							N/A	
34	Shop Buildings - Other Equipment								

410. RAILWAY OPERATING EXPENSE - Continued

410. RAILWAY OPERATING EXPENSE - Continued								
Line No.	Name of railway operating expense account	Freight					Passenger	Total
		Salaries and wages	Materials, tools, supplies, fuels, and lubricants	Purchased services	General	Total freight expense		
	(a)	(b)	(c)	(d)	(e)	(f)	(g)	(h)
		\$	\$	\$	\$	\$	\$	\$
	WAY AND STRUCTURES - Continued:							
	REPAIR AND MAINTENANCE - Continued:							
101	Locomotive Servicing Facilities							
102	Miscellaneous Buildings and Structures							
103	Coal Terminals						N/A	
104	Ore Terminals						N/A	
105	Other Marine Terminals						N/A	
106	TOFC/COFC - Terminals						N/A	
107	Motor Vehicle Loading and Distribution Facilities						N/A	
108	Facilities for Other Specialized Service Operations						N/A	
109	Roadway Machines							
110	Small Tools and Supplies							
111	Snow Removal							
112	Fringe Benefits - Running	N/A	N/A	N/A				
113	Fringe Benefits - Switching	N/A	N/A	N/A				
114	Fringe Benefits - Other	N/A	N/A	N/A				
115	Casualties and Insurance - Running	N/A	N/A	N/A				
116	Casualties and Insurance - Switching	N/A	N/A	N/A				
117	Casualties and Insurance - Other	N/A	N/A	N/A				
118	Lease Rentals - Debit - Running	N/A	N/A		N/A			
119	Lease Rentals - Debit - Switching	N/A	N/A		N/A			
120	Lease Rentals - Debit - Other	N/A	N/A		N/A			
121	Lease Rentals - (Credit) - Running	N/A	N/A		N/A			
122	Lease Rentals - (Credit) - Switching	N/A	N/A		N/A			
123	Lease Rentals - (Credit) - Other	N/A	N/A		N/A			
124	Joint Facility Rent - Debit - Running	N/A	N/A		N/A			
125	Joint Facility Rent - Debit - Switching	N/A	N/A		N/A			
126	Joint Facility Rent - Debit - Other	N/A	N/A		N/A			
127	Joint Facility Rent - (Credit) - Running	N/A	N/A		N/A			
128	Joint Facility Rent - (Credit) - Switching	N/A	N/A		N/A			
129	Joint Facility Rent - (Credit) - Other	N/A	N/A		N/A			
130	Other Rents - Debit - Running	N/A	N/A		N/A			
131	Other Rents - Debit - Switching	N/A	N/A		N/A			
132	Other Rents - Debit - Other	N/A	N/A		N/A			
133	Other Rents - (Credit) - Running	N/A	N/A		N/A			

410. RAILWAY OPERATING EXPENSE - Continued

Line No.	Name of railway operating expense account (a)	Freight						Passenger (g)	Total (h)
		Salaries and wages (b)	Material, tools, supplies, fuels, and lubricants (c)	Purchased services (d)	General (e)	Total freight expense (f)			
	WAY AND STRUCTURES - Continued:	\$	\$	\$	\$	\$	\$	\$	\$
	REPAIR AND MAINTENANCE - Continued:								
134	Other Rents - (Credit) - Switching	N/A	N/A		N/A				
135	Other Rents - (Credit) - Other	N/A	N/A		N/A				
136	Depreciation - Running	N/A	N/A	N/A	N/A				
137	Depreciation - Switching	N/A	N/A	N/A	N/A				
138	Depreciation - Other	N/A	N/A		N/A				
139	Joint Facility - Debit - Running	N/A	N/A		N/A				
140	Joint Facility - Debit - Switching	N/A	N/A		N/A				
141	Joint Facility - Debit - Other	N/A	N/A		N/A				
142	Joint Facility - (Credit) - Running	N/A	N/A		N/A				
143	Joint Facility - (Credit) - Switching	N/A	N/A		N/A				
144	Joint Facility - (Credit) - Other	N/A	N/A		N/A				
145	Dismantling Retired Road Property - Running								
146	Dismantling Retired Road Property - Switching								
147	Dismantling Retired Road Property - Other								
148	Other - Running								
149	Other - Switching								
150	Other - Other								
151	Total Way and Structures								
	EQUIPMENT:								
	LOCOMOTIVES:								
201	Administration								
202	Repair and Maintenance								
203	Machinery Repair								
204	Equipment Damaged								
205	Fringe Benefits	N/A	N/A	N/A					
206	Other Casualties and Insurance	N/A	N/A	N/A					
207	Lease Rentals - Debit	N/A	N/A		N/A				
208	Lease Rentals - (Credit)	N/A	N/A		N/A				
209	Joint Facility Rent - Debit	N/A	N/A		N/A				
210	Joint Facility Rent - (Credit)	N/A	N/A		N/A				
211	Other Rents - Debit	N/A	N/A		N/A				
212	Other Rents - (Credit)	N/A	N/A	N/A	N/A				
213	Depreciation	N/A	N/A		N/A				
214	Joint Facility - Debit	N/A	N/A		N/A				
215	Joint Facility - (Credit)	N/A	N/A		N/A				
216	Repairs Billed to Others - (Credit)	N/A	N/A		N/A				

410. RAILWAY OPERATING EXPENSE - Continued

Line No.	Name of railway operating expense account (a)	Freight						Passenger (g)	Total (h)
		Salaries and wages (b)	Material, tools, supplies, fuels, and lubricants (c)	Purchased services (d)	General (e)	Total freight expense (f)			
		\$	\$	\$	\$	\$	\$	\$	\$
217	LOCOMOTIVES—Continued:								
218	Dismantling Retired Property								
219	Other								
	Total Locomotives								
220	FREIGHT CARS:								
221	Administration							N/A	
222	Repair and Maintenance							N/A	
223	Machinery Repair							N/A	
224	Equipment Damaged							N/A	
225	Fringe Benefits	N/A	N/A	N/A				N/A	
226	Other Casualties and Insurance	N/A	N/A	N/A				N/A	
227	Lease Rentals - Debit	N/A	N/A	N/A				N/A	
228	Lease Rentals - (Credit)	N/A	N/A	N/A				N/A	
229	Joint Facility Rent - Debit	N/A	N/A	N/A				N/A	
230	Joint Facility Rent - (Credit)	N/A	N/A	N/A				N/A	
231	Other Rents - Debit	N/A	N/A	N/A				N/A	
232	Other Rents - (Credit)	N/A	N/A	N/A				N/A	
233	Depreciation	N/A	N/A	N/A				N/A	
234	Joint Facility - Debit	N/A	N/A	N/A				N/A	
235	Joint Facility - (Credit)	N/A	N/A	N/A				N/A	
236	Repairs Billed to Others - (Credit)	N/A	N/A	N/A				N/A	
237	Dismantling Retired Property							N/A	
238	Other							N/A	
	Total Freight Cars								
301	OTHER EQUIPMENT:								
	Administration								
302	Repair and Maintenance:								
303	Trucks, Trailers, and Containers - Revenue Service							N/A	
304	Floating Equipment - Revenue Service							N/A	
305	Passenger and Other Revenue Equipment								
306	Computers and Data Processing Systems								
307	Machinery								
308	Work and Other Non-Revenue Equipment								
309	Equipment Damaged								
310	Fringe Benefits	N/A	N/A	N/A					
311	Other Casualties and Insurance	N/A	N/A	N/A					
312	Lease Rentals - Debit	N/A	N/A	N/A					
	Lease Rentals - (Credit)	N/A	N/A	N/A					

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410. RAILWAY OPERATING EXPENSE - Continued							
Line No.	Name of railway operating expense account (a)	Freight					
		Salaries and wages (b)	Material, tools, supplies, fuels, and lubricants (c)	Purchased services (d)	General (e)	Total freight expense (f)	Passenger (g)
		\$	\$	\$	\$	\$	\$
	OTHER EQUIPMENT—Continued:						
313	Joint Facility Rent - Debit	N/A	N/A		N/A		
314	Joint Facility Rent - (Credit)	N/A	N/A		N/A		
315	Other Rents - Debit	N/A	N/A		N/A		
316	Other Rents - (Credit)	N/A	N/A		N/A		
317	Depreciation	N/A	N/A	N/A			
318	Joint Facility - Debit	N/A	N/A		N/A		
319	Joint Facility - (Credit)	N/A	N/A		N/A		
320	Repairs Billed to Others - (Credit)						
321	Dismantling Retired Property						
322	Other						
323	Total Other Equipment						
324	Total Equipment						
	TRAIN OPERATIONS:						
401	Administration						
402	Engine Crews						
403	Train Crews						
404	Dispatching Trains						
405	Operating Signals and Interlockers						
406	Operating Drawbridges						
407	Highway Crossing Protection						
408	Train Inspection and Lubrication						
409	Locomotive Fuel						
410	Electric Power Purchased or Produced for Motive Power						
411	Servicing Locomotives						
412	Freight Lost or Damaged - Solely Related	N/A	N/A	N/A			
413	Clearing Wrecks						
414	Fringe Benefits	N/A	N/A	N/A			
415	Other Casualties and Insurance	N/A	N/A	N/A			
416	Joint Facility - Debit	N/A	N/A		N/A		
417	Joint Facility - (Credit)	N/A	N/A		N/A		
418	Other						
419	Total Train Operations						
	YARD OPERATIONS:						
420	Administration						
421	Switch Crews						

410. RAILWAY OPERATING EXPENSE - Continued									
Line No.	Name of railway operating expense account (a)	Freight						Passenger	Total
		Salaries and wages (b)	Material, tools, supplies, fuels, and lubricants (c)	Purchased services (d)	General (e)	Total freight expense (f)			
		\$	\$	\$	\$	\$	\$	\$	\$
422	YARD OPERATIONS - Continued:								
423	Controlling Operations								
424	Yard and Terminal Clerical								
425	Operating Switches, Signals, Retarders and Humps								
426	Locomotive Fuel								
427	Electric Power Purchased or Produced for Motive Power								
428	Servicing Locomotives								
429	Freight Lost or Damaged - Solely Related	N/A	N/A	N/A					
430	Clearing Wrecks								
431	Fringe Benefits	N/A	N/A	N/A					
432	Other Casualties and Insurance	N/A	N/A	N/A					
433	Joint Facility - Debit	N/A	N/A		N/A				
434	Joint Facility - (Credit)	N/A	N/A		N/A				
435	Other								
	Total Yard Operations								
501	TRAIN AND YARD OPERATIONS COMMON:								
502	Cleaning Car Interiors				N/A			N/A	
503	Adjusting and Transferring Loads				N/A			N/A	
504	Car Loading Devices and Grain Doors				N/A			N/A	
505	Freight Lost or Damaged - all other	N/A	N/A	N/A					
506	Fringe Benefits	N/A	N/A	N/A					
	Total Train and Yard Operations Common								
507	SPECIALIZED SERVICE OPERATIONS:								
508	Administration							N/A	
509	Pickup & Delivery and Marine Line Haul							N/A	
510	Loading & Unloading and Local Marine							N/A	
511	Protective Services							N/A	
512	Freight Lost or Damaged - Solely Related	N/A	N/A	N/A				N/A	
513	Fringe Benefits	N/A	N/A	N/A				N/A	
514	Casualties and Insurance	N/A	N/A	N/A				N/A	
515	Joint Facility - Debit	N/A	N/A		N/A			N/A	
516	Joint Facility - (Credit)	N/A	N/A		N/A			N/A	
517	Other							N/A	
	Total Specialized Services Operations							N/A	
518	ADMINISTRATIVE SUPPORT OPERATIONS:								
	Administration								

410. RAILWAY OPERATING EXPENSE - Concluded

Line No.	Name of railway operating expense account	Freight					Passenger (g)	Total (h)
		Salaries and wages (b)	Material, tools, supplies, fuels, and lubricants (c)	Purchased services (d)	General (e)	Total freight expense (f)		
	(a)	\$	\$	\$	\$	\$	\$	\$
	ADMINISTRATIVE SUPPORT OPERATIONS - Con...							
519	Employees Performing Clerical and Accounting Functions							
520	Communication Systems Operation							
521	Loss and Damage Claims Processing							
522	Fringe Benefits	N/A	N/A	N/A				
523	Casualties and Insurance	N/A	N/A	N/A				
524	Joint Facility - Debit	N/A	N/A		N/A			
525	Joint Facility - (Credit)	N/A	N/A		N/A			
526	Other							
527	Total Administrative Support Operations							
528	Total Transportation							
	GENERAL AND ADMINISTRATIVE:							
601	Officers - General Administration							
602	Accounting, Auditing and Finance							
603	Management Services and Data Processing							
604	Marketing							
605	Sales							
606	Industrial Development						N/A	
607	Personnel and Labor Relations							
608	Legal and Secretarial							
609	Public Relations and Advertising							
610	Research and Development							
611	Fringe Benefits	N/A	N/A	N/A				
612	Casualties and Insurance	N/A	N/A	N/A				
613	Writedown of Uncollectible Accounts	N/A	N/A	N/A				
614	Property Taxes	N/A	N/A	N/A				
615	Other Taxes Except on Corporate Income or Payrolls	N/A	N/A	N/A				
616	Joint Facility - Debit	N/A	N/A		N/A			
617	Joint Facility - (Credit)	N/A	N/A		N/A			
618	Other							
619	Total General and Administrative							
620	Total Carrier Operating Expenses							

APPENDIX C

**STANDARDS FOR DETERMINING COMMUTER
RAIL SERVICE CONTINUATION SUBSIDIES
(Rail Services Planning Office Methodology)**

§ 1127.2

ments, buildings and yards, for which costs are collected and apportioned between commuter and other services. A designated area may extend beyond or outside the commuter service area.

"Dominant user" means the person, railroad, State, or local or regional transportation authority who is the owner of a rail property and/or facility.

"Facilities Utilization Plan" means a document identifying and itemizing the road and equipment properties used in providing commuter passenger service.

"Form R-1" means the railroad's annual report filed with the ICC in accordance with the requirements of section 20 of the Interstate Commerce Act.

"ICC" means Interstate Commerce Commission.

"Manpower Utilization Plan" means a document identifying the labor forces used in providing commuter passenger service.

"Minority user" means a user other than the dominant user of a rail property and/or facility on an incremental (use) basis.

"4R Act" means the Railroad Revitalization and Regulatory Reform Act of 1976, Pub. L. 94-210 (90 Stat. 31 *et seq.*).

"Railroad" means a common carrier by railroad, as defined in section 1(3) of the Interstate Commerce Act (49 U.S.C. 1(3)), including Conrail and Amtrak.

"RSPO" means the Rail Services Planning Office of the ICC.

"Secretary" means the Secretary of Transportation or his designated representative.

"Standards" means 49 CFR Part 1127 Standards for Determining Commuter Rail Service Continuation Subsidies.

"Subsidizer" means a State or a local or regional transportation authority which offers to make or makes a payment to continue commuter rail service pursuant to sections 304(c) and 304(e) of the 3R Act as amended.

"Subsidy period" means the term for which a subsidy agreement has been negotiated and is in operation.

"XX" means that where this notation precedes the last four digits of an

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1973, Pub. L. 93-236, 87 Stat. 985, 994, as amended by section 309 of the Railroad Revitalization and Regulatory Reform Act of 1976, Pub. L. 94-210, 90 Stat. 31, 57; Pub. L. 95-473, 92 Stat. 1355 (49 U.S.C. 10362).

Source: 44 FR 16411, Mar. 19, 1979, unless otherwise noted.

§ 1127.1 Definitions.

Unless otherwise required by the context, the following definitions apply in this part:

"Account" means an account in the ICC's Uniform System of Accounts for Railroad Companies (49 CFR Part 1201).

"3R Act" means the Regional Rail Reorganization Act of 1973 (Public Law 93-236 (45 U.S.C. 701 *et seq.*)) as amended by the Railroad Revitalization and Regulatory Reform Act of 1976 (Pub. L. 94-210 (90 Stat. 31 *et seq.*)) and the Local Rail Service Assistance Act of 1978 (Pub. L. 95-607 (92 Stat. 3059 *et seq.*)).

"Actual" means charges for rail facilities, properties and services which are directly identified with commuter service excluding those costs which are apportioned under § 1127.7 (f). Such charges shall be included in the proper account whether incurred by the subsidizer or the railroad.

"Amtrak" means the National Railroad Passenger Corporation.

"Base costs" means all costs that are specifically related to a rail property and/or facility, except those costs which could be avoided if the minority user(s) service(s) were not present.

"Base period" means a minimum of three months and a maximum of twelve months for which the latest traffic, revenue and cost data are available.

"Common Costs" means charges for rail facilities, properties and services in the designated area which are not solely for the benefit of a particular user. Such charges shall be included in the proper account.

"Commuter service" means the specific service for which the subsidizer has offered or agreed to make continuation payments.

"Conrail" means the Consolidated Rail Corporation.

"Designated area" means a portion of the rail facilities such as track seg-

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PART 1127—STANDARDS FOR DETERMINING COMMUTER RAIL SERVICE CONTINUATION SUBSIDIES

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APPENDIX I—SUBSIDY ESTIMATE

APPENDIX II—FINANCIAL STATUS REPORT

APPENDIX III—SPEED FACTORED GROSS TONS FORMULA (SFQGT)

Authority: Sec. 205(d)(5)(A) and (6) of the Regional Rail Reorganization Act of

subsidization among commuter, intercity, and freight rail services.

(e) These regulations set forth a method for establishing an estimated subsidy payment, which will enable a prospective subsidizer to formulate a subsidy offer within the context of section 304 of the 3R Act, as amended, and provide a basis for subsidy payment pending the negotiation of a subsidy agreement. When an agreement is concluded, subsequent payments shall be based on the negotiated subsidy. The final payment shall be adjusted to reflect the actual revenues derived, avoidable costs incurred and value of the properties used in the subsidy period.

(f) Section 304(e)(4)(C) of the 3R Act, as amended, provides that the Commuter Standards published as 49 CFR Part 1127, Standards For Determining Commuter Rail Service Continuation Subsidies under section 205(d) (5)(A) and (6) of the 3R Act, as amended, shall apply to rail passenger service provided under an agreement or lease pursuant to sections 303(b)(2) or 304(c)(2)(B) of the 3R Act, as amended, when an offer is made for the continuation of rail passenger service beyond the period required by such agreement or lease.

§ 1127.3 Subsidy agreement.

(a) *Notice of intention.* A prospective subsidizer shall notify the railroad of its intention to offer financial assistance for the continuation of commuter service no later than 40 days before the offer is to be tendered. The Notice shall specify:

(1) All modifications in the fares to be charged and in the existing level of service, including changes in routes, schedules, train seating capacity, performance standards, equipment units, and such other dimensions of service as the subsidizer may specify;

(2) The length of the subsidy period; and

(3) The name and address of the prospective subsidizer.

A copy of the Notice shall be served concurrently on RSPO and the Secretary.

(b) *Subsidy Estimate.* The railroad shall compute a subsidy estimate predicated on the information con-

tained in the Notice and the revenues attributable, avoidable costs of providing service, and reasonable return on value for the based period in accordance with the methodology prescribed in §§ 1127.6 through 1127.9 and in the format specified in Appendix I to this part. The estimate shall be adjusted as necessary to allow for any actual or projected variations in service, e.g. seasonal fluctuations in traffic or extraordinary events affecting service levels. The bases of any adjustments shall be stated with particularity. The railroad's estimate and the general terms it proposes for an agreement shall be served on the prospective subsidizer (with copies to RSPO and the Secretary) as soon as possible but not later than 30 days after the Notice is received.

(c) *Offer of Financial Assistance.* The prospective subsidizer must formulate an offer of subsidy predicated on the railroad's estimate, but may propose modifications which are consistent with these Standards. Subsidy offers must be served on the railroad (with copies to RSPO and the Secretary) not less than 60 days before the end of the subsidy period. The offer shall contain:

(1) A subsidy estimate in the form prescribed in Appendix I to this part;

(2) A resolution, authorization or other evidence that the prospective subsidizer has, or within a reasonable time will have, the authority to execute and fulfill an agreement to subsidize the service;

(3) Information demonstrating that the prospective subsidizer has, or within a reasonable time will have, the financial resources to subsidize the service and otherwise fulfill its contractual obligations; and

(4) A subsidy payment for the first month of service.

(d) *Negotiations*—(1) *General.* The railroad and the prospective subsidizer shall negotiate an initial subsidy agreement as soon as possible. The parties may agree in arm's-length negotiations to provisions which modify the Standards, subject to review of such modifications by RSPO. RSPO would not expect to disapprove variations from the Standards which are the product of arm's-length negotia-

tions and which are shown to be reasonable in the light of the pertinent facts and circumstances. When an agreement has been reached, a copy shall be filed promptly with RSPO for its review.

(2) *Significant Use.* Unless the parties agree otherwise, the subsidizer shall be deemed a significant user of the rail properties in the areas designated on the facilities utilization plan, and shall be assigned the directly identifiable and common costs, including base costs as applicable, of providing the commuter passenger service.

(3) *Insignificant Use.* A minority user, who is proposing incidental use of rail properties in the designated area, may be assigned the directly identifiable costs incurred in providing the service, plus an allowance for overhead as negotiated by the parties. If the parties are unable to agree on an overhead allowance, the methodology for apportioning common costs specified in § 1127.7 shall apply.

(4) *Mediation.* Upon request of either party, RSPO will mediate disagreements concerning the facilities utilization plan, the manpower utilization plan, the subsidy agreement and the application of these Standards.

(e) *Subsidy Payments.* The subsidizer shall make subsidy payments monthly in advance, based either upon the negotiated estimate, or in the absence of a subsidy agreement, upon the subsidizer's offer of financial assistance. The payment shall be determined by dividing the total subsidy by the number of months in the subsidy period. Interest on overdue subsidy payments shall accrue, at a rate of 100 basis points (1 percentage point) above the prime rate currently quoted at a principal bank in the commuter service area, for such period as they remain unpaid and the railroad has not terminated the service. The final subsidy payment shall be adjusted retroactively within 60 days of the filing of the final Financial Status Report required by paragraph (f) of this section to reflect the actual revenues derived, avoidable costs incurred and value of the properties used in providing rail commuter service during the subsidy period. The railroad shall establish a system to collect the data

necessary to make the adjustment. If the subsidizer is entitled to a refund, the railroad shall pay interest on the overpayment, at a rate of 100 basis points (1 percentage point) above the prime rate currently quoted at a principal bank in the commuter service area, accruing from the end of the subsidy period until the refund is made.

(f) *Financial Status Report.* The railroad shall submit to the subsidizer and RSPO a Financial Status Report in the form prescribed in Appendix II to this part within 60 days after the end of each three months of the subsidy period. Significant deviations from the subsidy estimate must be explained. Unless the parties otherwise agree, the second-to-last report shall be the basis for negotiating the subsequent subsidy agreement. The final report shall be the basis of the subsidy payment adjustment.

[44 FR 16411, Mar. 19, 1979, as amended at 45 FR 45, Jan. 2, 1980]

§ 1127.4 Interpretations of the Standards.

Parties desiring an interpretation of the Standards should file a written petition citing the section involved and setting forth their position and rationale. If the request arises from a dispute with other parties, the petitioner should identify those parties and serve each of them with a copy. Parties desiring to file a reply must do so within 10 days of their receipt of the petition. RSPO will issue an interpretation, unless it concludes that the matter raised requires amendment of the Standards, in which case RSPO will institute a rulemaking proceeding.

§ 1127.5 Access to records, audit and inspection.

(a) The subsidizer, RSPO, Conrail and the Secretary of Transportation shall have reasonable access to the records, accounts, working papers, and other documents and to the properties and equipment of any railroad or subsidizer which provides commuter passenger service or whose properties and equipment are used in providing commuter passenger service for the following purposes:

(1) To verify the accuracy and completeness of the subsidy estimate, the facilities utilization plan, the manpower utilization plan, and the Financial Status Reports;

(2) To audit the actual revenues attributable, costs incurred and service units maintained during the subsidy period;

(3) To inspect the properties and equipment used in providing the commuter passenger service and to measure the performance of the railroad under the offer of financial assistance and the subsidy agreement; or

(b) The properties and records described in paragraph (a) shall be made available for inspection and examination by the subsidizer, RSPO, Conrail or the Secretary of Transportation during regular business hours at a time and place mutually agreeable to the parties. The railroad or the subsidizer shall also reproduce such records, providing the requesting party pays the reasonable cost thereof.

144 FR 16411, Mar. 19, 1979, as amended at 45 FR 45, Jan. 2, 1980

§ 1127.6 Revenues attributable to commuter rail service.

The revenues attributable to commuter rail service shall be the total of the revenues, rentals and allowances assigned in accordance with this section. Where a third party controls revenues or rents attributable to the commuter service, the railroad shall credit the commuter service with the amounts of such revenues or rents credited to it by the third party, and shall use its best efforts to negotiate equitable apportionments. Revenues attributable to two or more commuter services shall be apportioned between them on the basis of car-miles operated under the respective offers of financial assistance or subsidy agreements. The revenues, rentals and allowances assigned shall be derived from the following accounts.

(a) *Revenue Accounts.* (1) Account 101—Freight (Mail portion) Account 102—Passenger, Account 103—Passenger Related; Account 104—Switching; Account 105—Water Transfers. The revenues assigned to these accounts shall be the actual revenues attributable to commuter service that are di-

rectly identified with the operation of commuter trains, excluding rail service continuation payments.

(2) Account 110—Incidental. The revenues assigned to this account earned on commuter trains shall be credited directly to the commuter service. The commuter service portion of revenues generated at fixed facilities used in common with other services shall be determined from the relative passenger on-off counts (including pass riders) at those facilities. Special studies of on-off counts may be substituted for continuous records of such counts where desired. Any amounts included in this account from the sale of electric current or power shall be assigned to commuter service in accordance with § 1127.7(f)(3)(v) if related to train operations and (§ 1127.7(f)(3)(ix)) if related to yard operations.

(3) Account 121—Joint facility—Cr.; Account 122—Joint facility—Dr. To the extent that the terms of joint facility agreements yield apportionments of revenues to commuter services, the amounts so yielded shall be credited or debited directly to the commuter service. If the terms of the agreements do not yield such apportionments, passenger on-off counts (including pass riders) shall be the basis of apportionment at joint facilities where passengers are boarded or discharged; and at other facilities counts of cars handled as developed from special studies or continuous records shall be the basis of apportionment.

(b) *Rentals—Account 510—Miscellaneous rent income.* The rentals assigned to this account which are attributable to commuter service shall be the actual amount derived from the rental of commuter service equipment or other property including property owned by the subsidizer, Conrail, Amtrak or other parties.

(c) *Pass Rider Allowance.* Attributable revenues of the commuter service shall be credited with an allowance for passengers using passes or reduced fare tickets issued by the railroad (or predecessor companies). The parties may continue existing practices for crediting such allowances. In the absence of an agreement, the amount of such credit shall be determined on the basis of currently applicable fares

charged revenue commuter passengers.

(d) Conversion Chart for Revenue Accounts.

Revenue account title	Previous account number	Present account number
Freight (Mail portion)	101	101
Passenger	102	102
Passenger Related	103, 104, 105, 106, 131	103
Switching	110	104
Water Transfers	113	105
Incidental	132, 133, 136, 141, 142	110
Joint Facility—Cr.	151	121
Joint Facility—Dr.	152	122
Miscellaneous Rent Income	510	510

§ 1127.7 Avoidable costs of providing service.

(a) *Assignment of costs.* To the maximum extent practicable, the directly identifiable and common costs for each designated area shall be developed from a facilities utilization plan and a manpower utilization plan. The base costs shall be assigned to the dominant user. The facilities and manpower utilization plans, developed on the basis of dominant and minority user(s), are to be completed with the assistance of available and appropriate cost and accounting records such as time sheets, material requisitions, charge cards, vouchers, and the like. [All accounts shall be separated between labor and material (non-labor charges.) Otherwise, costs may be assigned to the minority service in a manner agreed to by the parties. The parties may rely on historical data; conduct special studies; develop their own apportionment formulae based on use; or agree on a combination of these methods. Upon request of either party, RSPO will mediate disputes concerning the proper methodology for assigning costs. Any costs which are not assigned under the foregoing procedure shall be assigned in accordance with the methodology prescribed in subsection (e) and (f) below, subject to the condition that either party may request a special study. The requesting party will be responsible for designing the study and obtaining the other party's approval of the design. The re-

sults of the study will be binding on both parties unless they mutually agree to disregard the results. Where commuter service is not the dominant user the avoidable costs common to two or more commuter services shall be apportioned between them on the basis of car-miles operated under the respective offers of financial assistance or subsidy agreements. In assigning costs to the minority user(s) it is understood that the amounts charged to a particular function shall include both the directly attributable expenses and the minority user's portion of the common expenses for that function. Also, the assignment of common costs associated with some supervision or overhead functions that relate to both dominant user and minority user(s) activities requires the inclusion of the applicable dominant user account in the apportionment base.

(b) *Facilities Utilization Plan.* The parties shall develop a facilities utilization plan which shall identify the dominant and minority user(s). The facilities utilization plan shall identify and itemize the road and equipment properties used by the minority user(s) and assign to each property or group of properties the agreed percentage of use devoted to the minority user(s). In the event that there is only one service being operated, the facilities utilization plan shall identify only those properties used and useful to that service. The plan shall identify those road properties which are avoidable upon discontinuance of the minority user(s) service for the purposes of determining road depreciation, retirement and dismantling charges (§ 1127.7 (e)-(f)) and value of road properties (§ 1127.8 (b) and (c)). The roadway properties and facilities should be divided into areas or segments consisting of stretches of property where operations or use remain fairly constant and pinpointing those places where the operations or use change (e.g., number of tracks change, diverging or entering branch lines and other similar changes). Properties and equipment normally covered in a facilities utilization plan include: trackage; signal system; electrification system; interlocking plants; bridges and draw-bridges; stations and platforms; rail-

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highway crossings; yards; power plants; shops; enginehouses and servicing facilities; storehouses; land; rolling stock; and other facilities or equipment rosters, track diagrams or maps of the properties in the above categories, and usage measures for each class of facility and equipment by specific facility or segment (e.g., track density charts, trains sheets, timetables, blocking records, yarding programs, station workloads, etc.) to determine the percentage of use of facilities or equipment in providing the minority service(s).

(c) *Manpower Utilization Plan.* The parties shall also develop a manpower utilization plan separated between designated areas in which the commuter authority is the dominant user and designated areas in which the commuter authority is the minority user. Where the commuter service is the dominant user, the plan shall identify the labor forces used in providing both the commuter service and any minority service(s). The plan shall list all persons employed according to job title, work location, account and percentage of time devoted to dominant and minority service(s) duties. Wherec the commuter service is the minority user the plan shall identify the labor forces used in providing the commuter service. The plan shall list the persons employed according to the job title, work location, account and percentage of time devoted to commuter service duties.

(d) *Special studies.* All special studies shall be conducted jointly by the railroad and the subsidizer. The length and frequency of the studies and the standardized measurement procedures utilized in the studies shall be negotiated by the parties. In the event of impasse, either party may submit the dispute to RSPO for resolution and its decision shall be final. The cost of studies which are prescribed by these Standards or which the parties voluntarily agree to perform shall be attributed to the commuter service. The cost of studies performed at the request of only one party shall be borne exclusively by that party and shall not be attributed to the commuter service.

(e) Conversion Chart and Assignment Basis of Expense Accounts to Commuter Service.

Operating expense group and accounts	Previous account No.	Present account No.	Basis of assignment to commuter service
ADMINISTRATION			
(1) MAINTENANCE OF WAY AND STRUCTURES			
Track	201	XX-16-02 XX-19-02	Various accounts (1127.7(0)(1)(b))
Bridges and buildings	201	XX-16-03 XX-19-03	Various accounts (1127.7(0)(1)(c))
Signals	201	XX-16-04 XX-19-04	Various accounts (1127.7(0)(1)(d))
Communications	201	XX-16-05 XX-19-05	Various accounts (1127.7(0)(1)(e))
Other	201	XX-16-06 XX-19-06	Various accounts (1127.7(0)(1)(f))
REPAIR AND MAINTENANCE			
Running			
Roadway	202	XX-14-10 XX-17-10	Speed factored gross tons SFGT (1127.7(0)(1)(g))
Tunnels and subways	206	XX-14-11 XX-17-11	Do
Bridges and culverts	206, 210	XX-14-12 XX-17-12	Do
Ties	212	21-14-13 21-17-13	Do
Rails	214	21-14-14 21-17-14	Do
Other track material	216	21-14-15 21-17-15	Speed factored gross tons SFGT (1127.7(0)(1)(a))
Ballast	216	21-14-16 21-17-16	Do

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Operating expense group and accounts	Previous account No.	Present account No.	Basis of assignment to commuter service
REPAIR AND MAINTENANCE			
Running—Continued			
Track laying and surfacing	220	XX-14-17 XX-17-17	Do
Road property damaged	202-220	XX-14-46 XX-17-46	Do
Highway grade crossings	273	XX-14-22 XX-17-22	Do
Switching			
Roadway	202	XX-15-10 XX-18-10	Cars dispatched (1127.7(0)(1)(i))
Tunnels and subways	206	XX-15-11 XX-18-11	Do
Bridges and culverts	206, 210	XX-15-12 XX-18-12	Do
Ties	212	21-15-13 21-18-13	Do
Rails	214	21-15-14 21-18-14	Do
Other track material	216	21-15-15 21-18-15	Do
Ballast	216	21-15-16 21-18-16	Do
Track laying and surfacing	220	XX-15-17 XX-18-17	Do
Road property damaged	202-220	XX-15-46 XX-18-46	Do
Highway grade crossings	273	XX-15-22 XX-18-22	Do
Station and office buildings	227	XX-16-23 XX-19-23	Square feet and passenger—on-off count (1127.7(0)(1)(j))
Road property damaged—other	221-265	XX-16-46 XX-19-46	Repair and maintenance—running plus switching (1127.7(0)(1)(k))
Signals and interlockers	249	XX-14-19 XX-17-19	Train movements (1127.7(0)(1)(l))
Running			
Switching			Actual
Communications system	247	XX-15-19 XX-18-19	Various accounts (1127.7(0)(1)(m))
Power systems	253, 267	XX-16-20 XX-19-20	Kilowatt hours (1127.7(0)(1)(n))
Shop buildings	235, 253, 257	XX-16-21 XX-19-21	
Locomotives			
Other equipment			
Locomotives servicing facilities	231, 233	XX-16-27 XX-19-27	Unlit miles, fuel dispensed (1127.7(0)(1)(o))
Miscellaneous buildings and structures	221, 229, 239, 265, 269	XX-16-26 XX-19-26 XX-16-36 XX-19-36	Repair and maintenance—running plus switching (1127.7(0)(1)(p))
Roadway machines			Do
Small tools and supplies	271	XX-16-37 XX-19-37	Do
Snow removal	272	XX-16-38 XX-19-38	Do
Dismantling retired road property	270, 306		Actual See footnote 2
Running			See footnote 2
Switching			Actual See footnote 2
Other			Actual See footnote 2
Fringe benefits	277, 457	XX-16-39 XX-19-39	Various accounts (1127.7(0)(1)(v))
Running			
		12-14-00 12-17-00	

Operating expense group and accounts	Previous account No.	Present account No.	Basis of assignment to commuter service	Operating expense group and accounts	Previous account No.	Present account No.	Basis of assignment to commuter service
SWITCHING—Continued							
Switching.....		12-15-00	Do.	Other.....		37-16-00	Do.
Other.....		12-16-00	Do.	Joint facility—Cr.....		37-19-00	
		12-18-00		Running.....	279		
Casualties and Insurance.....	274, 275	12-19-00		Switching.....		38-14-00	
Running.....			Various accounts (1127.7(1)(iv)).	Other.....		38-17-00	Do.
		52-14-00				38-15-00	Do.
Switching.....		52-17-00		Other.....		38-16-00	Do.
Other.....		53-14-00	Do.			38-18-00	
		53-17-00		Other.....	267, 274, 281, 282	38-19-00	
		52-15-00		Running.....			Various accounts (1127.7(1)(iv)) (any amounts in this category which were charged to previous account No. 267 shall be assigned on an actual basis) See footnote 2.
		52-18-00		Switching.....		XX-15-99	See footnote 2.
		53-15-00	Do.	Other.....		XX-16-99	See footnote 2.
		53-16-00				XX-18-99	See footnote 2.
		52-19-00		(2) EQUIPMENT LOCOMOTIVES		XX-19-99	See footnote 2.
		53-18-00		Administration.....	301	XX-24-01	Various accounts (1127.7(1)(2)(iv)).
		53-19-00	Actual.	Repair and maintenance.....	311	XX-24-41	Special study and actual (1127.7(1)(2)(iv)).
Lease rentals—Dr.....	542	31-14-00	Do.	Machinery repair.....	302	XX-24-40	Various accounts (1127.7(1)(2)(iv)).
Running.....		31-17-00	Do.	Equipment damaged.....	311	XX-24-48	Special study and actual (1127.7(1)(2)(iv)).
Switching.....		31-15-00	Do.	Dismantling retired property.....	308, 329	XX-26-48	Actual. See footnote 3.
Other.....		31-18-00	Do.			XX-24-39	
		31-19-00	Do.			XX-26-39	
Lease rentals—Cr.....	608	32-14-00	Do.	Fringe benefits.....	335, 457	12-24-00	Various accounts (1127.7(1)(2)(iv)).
Running.....		32-17-00	Do.	Other casualties and insurance.....	332, 333	12-26-00	Various accounts (1127.7(1)(2)(iv)).
Switching.....		32-15-00	Do.			52-24-00	Do.
Other.....		32-16-00	Do.	Lease rentals—Dr.....	537	53-24-00	Actual.
		32-18-00	Do.	Lease rentals—Cr.....	504	31-26-00	Do.
		32-19-00	Do.	Other rentals—Dr.....	537	32-24-00	Do.
Joint facility rentals—Dr.....	641	33-14-00	Agreement or passenger on-off count (1127.6(e)(3))	Other rentals—Cr.....	504	35-24-00	Do.
Running.....		33-17-00	Do.	Depreciation.....	331	36-24-00	Do.
Switching.....		33-15-00	Do.	Joint facility—Dr.....	338	62-24-00	Agreement or passenger on-off count (1127.6(e)(3)).
Other.....		33-16-00	Do.	Joint facility—Cr.....	337	37-26-00	Do.
		33-18-00	Do.	Repairs billed to others—Cr.:.....		38-24-00	Do.
		33-19-00	Do.	Machinery.....	302	38-26-00	Actual.
Joint facility rentals—Cr.....	608	34-14-00	Do.	Locomotives.....	311	40-24-00	Do.
Running.....		34-17-00	Do.	Road property and equipment damaged.....	311, 317, 316, 323, 326, 328, 332, 339	40-26-40	Do.
Switching.....		34-15-00	Do.	Other.....		40-24-41	Do.
Other.....		34-18-00	Do.			40-26-41	Do.
		34-19-00	Do.			40-24-48	Do.
Other rentals—Dr.....	543	35-14-00	Actual.			40-26-48	Do.
Running.....		35-17-00	Do.	Administration.....	301	XX-24-99	Various accounts (1127.7(1)(2)(iv)).
Switching.....		35-15-00	Do.	OTHER EQUIPMENT		XX-26-99	
Other.....		35-18-00	Do.	Administration.....	317	XX-25-01	Various accounts (1127.7(1)(2)(iv)).
		35-19-00	Do.	Passenger and other revenue equipment.....		XX-27-01	Actual.
Other rentals—Cr.....	510	36-14-00	Do.	Computers and data processing systems.....	Various accounts	XX-25-45	Do.
Running.....		36-17-00	Do.	Machinery.....	302	XX-27-46	Various accounts (1127.7(1)(2)(iv)).
Switching.....		36-15-00	Do.			XX-25-40	
Other.....		36-18-00	Do.			XX-27-40	
		36-19-00	Do.				
Depreciation.....	268	38-14-00	Actual—restricted to properties identified in section (1127.6(b)). See footnote 2.				
Running.....		38-17-00	Do.				
Switching.....		38-15-00	Do.				
Other.....		38-16-00	Do.				
		38-18-00	Do.				
		38-19-00	Do.				
Joint facility—Dr.....	278	37-14-00	Agreement or passenger on-off count (1127.6(e)(3)).				
Running.....		37-17-00	Agreement or passenger on-off count (1127.6(e)(3)).				
Switching.....		37-15-00	Agreement or passenger on-off count (1127.6(e)(3)).				
		37-16-00	Agreement or passenger on-off count (1127.6(e)(3)).				

Operating expense group and accounts	Previous account No.	Present account No.	Basis of assignment to commuter service
OTHER EQUIPMENT—Continued			
Work and other non-revenue equipment.....	326, 328	XX-25-47	Various accounts (1127.7)(N2)(v)).
Equipment damaged.....	317, 318, 323, 328, 328	XX-27-47 XX-26-48 XX-27-46	Actual.
Dismantling retired property.....	306, 328	XX-26-39	Do. ⁹
Fringe benefits.....	335, 457	XX-27-39 12-25-00 12-27-00	See footnote 3. Various accounts (1127.7)(N2)(v)).
Other casualties and insurance.....	332, 333	52-25-00 52-27-00 53-25-00 53-27-00	Various accounts (1127.7)(N2)(v)). Do.
Lease rentals—Dr.....	538	31-25-00 31-27-00	Actual.
Lease rentals—Cr.....	505	32-25-00 32-27-00	Do.
Joint facility rentals—Dr.....	541	33-25-00 33-27-00	Agreement or passenger on-off count (1127.6)(a)(3)).
Joint facility rentals—Cr.....	508	34-25-00 34-27-00	Do.
Other rentals—Dr.....	538	35-25-00 35-27-00	Actual.
Other rentals—Cr.....	505	36-25-00 36-27-00	Do.
Depreciation.....	331	62-25-00 62-27-00	Do.
Joint facility—Dr.....	336	37-25-00 37-27-00	Agreement or passenger on-off count (1127.6)(a)(3)).
Joint facility—Cr.....	337	38-25-00 38-27-00	Do.
Repairs billed to others—Cr, passenger and other revenue equipment.....	317	40-25-45 40-27-45	Actual.
Computer and data processing equipment.....	(*)	40-25-48 40-27-48	Do.
Work and other nonrevenue equipment.....	326, 328	40-25-47 40-27-47	Various accounts (1127.7)(N2)(v)).
Road property and equipment damaged.....	317, 318, 323, 326, 328	40-25-46 40-27-46	Actual.
Other.....	330, 332, 339	XX-25-99 XX-27-99	Actual/various accounts (1127.7)(i) (2)(v)).
(3) TRANSPORTATION TRAIL OPERATIONS			
Administration.....	371	XX-41-01 XX-51-01	Various accounts (1127.7)(i)(3)(v)).
Engine crews.....	392, 402	XX-41-58 XX-51-58	Actual, cars dispatched (1127.7)(i)(3)(v)).
Train crews.....	401, 402, 403	XX-41-57 XX-51-57	Do.
Dispatching trains.....	372	XX-41-58 XX-51-58	Train hours (1127.7)(i)(3)(v)).
Operating signals and interlockers.....	404	XX-41-59 XX-51-59	Train movements (1127.7)(i)(3)(v)).
Operating drawbridges.....	408	XX-41-60 XX-51-60	Do.
Highway crossing protection.....	405	XX-41-61 XX-51-61	Do.
Train inspection and lubrication.....	311, 402	XX-41-62 XX-51-62	Cars dispatched (1127.7)(i)(3)(v)).
Locomotive fuel.....	394	XX-41-67 XX-51-67	Actual.
Electric power purchased/produced for motive power.....	395, 398, 445	XX-41-68 XX-51-68	Actual weighted (1127.7)(i)(3)(v)).
Servicing locomotives.....	400	XX-41-69 XX-51-69	Locomotive units (1127.7)(i)(3)(v)).
Freight lost or damaged—solely related.....	418, 419	51-41-00 51-51-00	Responsibility/reserve account (3)(v)).
Clearing wrecks.....	415	XX-41-63 XX-51-63	Do.
Fringe benefits.....	409, 457	12-41-00 12-51-00	Various accounts (1127.7)(i)(3)(v)).

Operating expense group and accounts	Previous account No	Present account No	Basis of assignment to commuter service
(3) TRANSPORTATION TRAM OPERATIONS —Continued			
Other casualties and insurance	414, 416, 417, 420	52-41-00 52-51-00 53-41-00 53-51-00	Responsibility/reserve account (1127 7(f) (3)(vi)).
Joint facility—Dr	412	37-41-00	Agreement or passenger on-off count (1127 6(e)(3))
Joint facility—Cr	413	38-41-00 38-51-00	Do.
Other	402, 403, 411, 420, 441	XX-41-89 XX-51-89	Actual
YARD OPERATIONS			
Administration	371	XX-42-01 XX-52-01	Various accounts (1127 7(f)(3)(vii))
Switch crews	376, 380, 389	XX-42-64 XX-52-64	Unit hours, special study (1127 7(f) (3)(ix))
Controlling operations	377, 389	XX-42-65 XX-52-65	Do
Yard and terminal clerical	377, 389	XX-42-66 XX-52-66	Do
Operating switches, signals, retarders, and humps	378, 389	XX-42-59 XX-52-59	Do
Locomotive fuel	382	XX-42-67 XX-52-67	Do
Electric power purchased/produced for motive power.	383, 384, 445	XX-42-68 XX-52-68	Do
Servicing locomotives	388	XX-42-89 XX-52-89	Do
Freight lost or damaged solely related	416, 419	51-42-00 51-52-00	Responsibility/reserve account (1127 7(f) (3)(vii))
Clearing wrecks	415	XX-42-63 XX-52-63	Do.
Fringe benefits	408, 457	12-42-00 12-52-00	Various accounts (1127 7(f)(3)(viii)).
Other casualties and insurance	414, 416, 420	52-42-00 52-52-00 53-42-00 53-52-00	Responsibility/reserve account (1127 7(f) (3)(vii))
Joint facility—Dr	390, 412	37-42-00	Agreement or passenger on-off count (1127 6(e)(3))
Joint facility—Cr	391, 413	38-42-00 38-52-00	Do
Other	411, 420	XX-42-89 XX-52-89	Actual.
TRAIN AND YARD OPERATIONS COMMON			
Cleaning car interiors	402	XX-43-70 XX-53-70	Do
Freight lost or damaged—all other	416, 419	51-43-00 51-53-00	Responsibility/reserve account (1127 7(f) (3)(vii))
Fringe benefits	409	12-43-00 12-53-00	Various accounts (1127 7(f)(3)(viii)).
ADMINISTRATIVE SUPPORT OPERATIONS			
Administration	371	XX-45-01 XX-55-01	Various accounts (1127 7(f)(3)(vii))
Employees performing clerical and accounting functions.	373, 376	XX-45-76 XX-55-76	Various accounts (1127 7(f)(3)(ix))
Communication systems operations	373, 376, 407	XX-45-77 XX-55-77	Administrative accounts (1127 7(f) (3)(vii))
Loss and damage claims processing	416, 419	XX-45-76 XX-55-76	Responsibility/reserve account (1127 7(f) (3)(vii))
Fringe benefits	409, 457	12-45-00 12-55-00	Various accounts (1127 7(f)(3)(viii))
Casualties and insurance	414, 416, 420	52-45-00 52-55-00 53-45-00 53-55-00	Responsibility/reserve account (1127 7(f) (3)(vii)).
Joint facility—Dr	412, 447	37-45-00 37-55-00	Agreement or passenger on-off count (1127 6(e)(3))
Joint facility—Cr	413, 448	38-45-00	Do

Operating expense group and accounts	Previous account No.	Present account No.	Basis of assignment to commuter service
ADMINISTRATIVE SUPPORT OPERATIONS—Continued			
Other.....	411, 420	XX-45-99 XX-55-99	Actual.
(4) GENERAL AND ADMINISTRATIVE			
Officers—General Superintendence.....	351, 451, 452, 453	XX-02-01 XX-03-01	Actual. ¹
Accounting, auditing and finance.....	451, 452	XX-02-06 XX-03-06	Actual. ¹
Management services and data processing.....	451, 452	XX-02-07 XX-03-07	Do.
Marketing.....	352	XX-02-08 XX-03-08	Do.
Sales.....	352	XX-02-09 XX-03-09	Do.
Personnel and labor relations.....	451, 452	XX-02-01 XX-03-01	Do.
Legal and secretarial.....	274, 332, 420, 452, 454	XX-02-02 XX-03-02	Do.
Public relations and advertising.....	353, 354	XX-02-03 XX-03-03	Do.
Research and Development.....	(*)	XX-02-04 XX-03-04	Do.
Other.....	351, 360, 451, 452, 453, 460	XX-02-09 XX-03-09	Do.
Casualties and insurance.....	357, 455	52-02-00 52-03-00 53-02-00 53-03-00	Do.
Write-down of uncollectible accounts.....	Various Accounts	52-02-00 53-02-00 53-03-00	Do.
Fringe benefits.....	359, 456, 457	12-02-00 12-03-00	Various accounts (1127.7)(b)(4).
Property taxes.....	532	04-02-00 04-03-00	Actual—as determined under section 1127.8(b). See footnote 4.
Other taxes except on corporate income or payroll.....	532	05-02-00 05-03-00	Actual.
Joint facility—Dr.....	401	37-02-00 37-03-00	Agreement or passenger on-off count (1127.8)(e)(3).
Joint facility—Cr.....	402	38-02-00 38-03-00	Do.

¹These costs may include the actual expenses incurred in administering the subsidy program. There shall be no apportionment of common costs charged to these accounts.

²In those situations where the commuter service is the dominant user, the minority user(s) shall be assigned any charges to these accounts on an actual basis.

³The minority user(s) shall pay for units of shop and powerplant machinery which could be disposed of if the minority services were discontinued.

⁴On line segments which are owned by a state, local or regional transportation authority, the minority user(s) shall be charged with those property taxes including in lieu of tax payments which would not be incurred in the absence of the minority service(s).

⁵Various accounts.

(f) **Apportionment Rules For Assigning Common Costs to Commuter Service.** The accounts specified under § 1127.7(e) which have an assignment basis other than "Actual" shall be apportioned according to the rules contained in this section.

(1) **Maintenance of Way and Structures—(i) Repair and Maintenance—Switching.** The common costs assigned to these accounts shall be apportioned on the ratio of the commuter service cars dispatched in the designated area to the total cars dispatched in the designated area.

(ii) **Repair and Maintenance—Running.** For a designated area the SFQGT shall be calculated in accordance with the following formula:

compliance with the formula set forth in Appendix III.

(iii) **Station and Office Buildings.** The common costs assigned to these accounts shall be first apportioned on the ratio of total square feet devoted to passenger service to the total square feet used in the facility. The passenger portion shall then be apportioned on the ratio of the commuter service on-off passenger count (including pass riders) in the designated area to the total on-off passenger count (including pass riders) in the designated area.

(iv) **Signals and Interlockers.** The common costs assigned to these accounts shall be apportioned on the ratio of the number of commuter service train movements through these facilities to the total of all train movements through these facilities.

(v) **Power Systems.** The common costs assigned to these accounts shall be apportioned on the ratio of the kilowatt hours consumed by the commuter service to the total kilowatt hours consumed by all services in the designated area.

(vi) **Shop Buildings.** The common costs assigned to these accounts shall be apportioned on the ratio of the labor charges expended servicing commuter service equipment in the designated area to the railroad's total labor charges expended servicing all equipment in the designated area.

(vii) **Locomotive Servicing Facilities.** The common costs assigned to fuel stations shall be kept separate from the common costs assigned to the balance of the locomotive servicing facilities. The common costs assigned to fuel stations shall be apportioned on the ratio of the amount of fuel dispensed in commuter service to the total amount of fuel dispensed for all services using these facilities. The common costs assigned to the balance of the locomotive servicing facilities shall be apportioned on the ratio of the locomotive unit miles (diesel and electric) generated from commuter service using these facilities in the designated area to the railroad's total locomotive unit miles in the designated area (diesel and electric) for all services.

(viii) **Road Property Damaged—Other: Miscellaneous Buildings and**

Structures. The common costs assigned to these accounts shall be apportioned on the ratio of the amounts assigned to commuter service to the railroad's total in the designated area for the following accounts:

XX-11-10	XX-14-10	XX-17-10
XX-12-10	XX-15-10	XX-18-10
XX-13-10	XX-16-10	XX-19-10
XX-14-11	XX-17-11	XX-20-11
XX-15-11	XX-18-11	XX-21-11
XX-16-11	XX-19-11	XX-22-11
XX-17-12	XX-20-12	XX-23-12
XX-18-12	XX-21-12	XX-24-12
XX-19-12	XX-22-12	XX-25-12
XX-20-13	XX-23-13	XX-26-13
XX-21-13	XX-24-13	XX-27-13
XX-22-14	XX-25-14	XX-28-14
XX-23-14	XX-26-14	XX-29-14
XX-24-15	XX-27-15	XX-30-15
XX-25-15	XX-28-15	XX-31-15
XX-26-16	XX-29-16	XX-32-16
XX-27-16	XX-30-16	XX-33-16
XX-28-17	XX-31-17	XX-34-17
XX-29-17	XX-32-17	XX-35-17
XX-30-18	XX-33-18	XX-36-18
XX-31-18	XX-34-18	XX-37-18
XX-32-19	XX-35-19	XX-38-19
XX-33-20	XX-36-20	XX-39-20
XX-34-21	XX-37-21	XX-40-21

(ix) **Administration—Track.** The common costs assigned to these accounts shall be apportioned on the ratio of the amounts assigned to commuter service to the railroad's total in the designated area for the following accounts:

XX-11-10	XX-14-10	XX-17-10
XX-12-10	XX-15-10	XX-18-10
XX-13-10	XX-16-10	XX-19-10
XX-14-11	XX-17-11	XX-20-11
XX-15-11	XX-18-11	XX-21-11
XX-16-11	XX-19-11	XX-22-11
XX-17-12	XX-20-12	XX-23-12
XX-18-12	XX-21-12	XX-24-12
XX-19-12	XX-22-12	XX-25-12
XX-20-13	XX-23-13	XX-26-13
XX-21-13	XX-24-13	XX-27-13
XX-22-14	XX-25-14	XX-28-14
XX-23-14	XX-26-14	XX-29-14
XX-24-15	XX-27-15	XX-30-15
XX-25-15	XX-28-15	XX-31-15
XX-26-16	XX-29-16	XX-32-16
XX-27-16	XX-30-16	XX-33-16
XX-28-17	XX-31-17	XX-34-17
XX-29-17	XX-32-17	XX-35-17
XX-30-18	XX-33-18	XX-36-18
XX-31-18	XX-34-18	XX-37-18
XX-32-19	XX-35-19	XX-38-19
XX-33-20	XX-36-20	XX-39-20
XX-34-21	XX-37-21	XX-40-21

(x) **Administration—Bridges and Buildings.** The common cost assigned to these accounts shall be apportioned on the ratio of the amounts assigned to commuter service to the railroad's total in the designated area for the following accounts:

XX-11-12	XX-14-12	XX-17-12
XX-12-12	XX-15-12	XX-18-12

XX-13-23	XX-16-23	XX-19-23
XX-13-24	XX-16-24	XX-19-24
XX-13-25	XX-16-26	XX-19-26
XX-13-26	XX-16-27	XX-19-27
XX-13-27	XX-16-28	XX-19-28
XX-13-28	XX-16-29	XX-19-29
XX-13-29	XX-16-30	XX-19-30
XX-13-30	XX-16-31	XX-19-31
XX-13-31	XX-16-32	XX-19-32
XX-13-32	XX-16-33	XX-19-33
XX-13-33	XX-16-34	XX-19-34
XX-13-34	XX-16-35	XX-19-35
XX-13-35	XX-16-36	XX-19-36
XX-13-36	XX-16-37	XX-19-37
XX-13-37	XX-16-38	XX-19-38
XX-13-38	XX-16-39	XX-19-39
XX-13-39	XX-16-40	XX-19-40
XX-13-40	XX-16-41	XX-19-41
XX-13-41	XX-16-42	XX-19-42
XX-13-42	XX-16-43	XX-19-43
XX-13-43	XX-16-44	XX-19-44
XX-13-44	XX-16-45	XX-19-45
XX-13-45	XX-16-46	XX-19-46
XX-13-46	XX-16-47	XX-19-47
XX-13-47	XX-16-48	XX-19-48
XX-13-48	XX-16-49	XX-19-49
XX-13-49	XX-16-50	XX-19-50

XX-16-48
XX-14-48
XX-15-48

(xl) *Administration—Signals.* The common costs assigned to these accounts shall be apportioned on the ratio of amounts in accounts XX-11-19, XX-12-19, XX-14-19, XX-16-19, XX-17-19, XX-18-19, assigned to commuter service to the railroad's total in these accounts for the designated area.

(c)(1) *Administration—Other.* The common costs assigned to these accounts shall be apportioned on the ratio of the amounts in all of the accounts under § 1127.7(c)(1) assigned to commuter service (excluding accounts XX-13-20, XX-16-20, XX-19-20, 12-11-00, 12-12-00, 12-13-00, 12-14-00, 12-15-00, 12-16-00, 12-17-00, 12-18-00, 12-19-00 all rentals accounts, joint facilities accounts, fringe benefits accounts, casualties and insurance accounts and depreciation accounts) to the railroad's total for all accounts (firelight, passenger, common) under maintenance of way and structures in the designated area.

(xiii) *Communications Systems.* The common costs assigned to these accounts shall be apportioned on the ratio of the amounts assigned to commuter service to the railroad's total in the designated area for the following accounts:

XX-13-02	XX-16-02	XX-18-02
XX-13-03	XX-16-03	XX-18-03
XX-13-04	XX-16-04	XX-18-04
XX-13-06	XX-16-06	XX-18-06
XX-13-05	XX-16-05	XX-18-05
XX-32-05	XX-42-05	XX-52-05
XX-32-06	XX-42-06	XX-52-06
XX-21-01	XX-24-01	XX-26-01
XX-22-01		
XX-23-01	XX-25-01	XX-27-01
XX-31-01	XX-41-01	XX-51-01
XX-32-01	XX-42-01	XX-52-01
XX-33-01	XX-43-01	XX-53-01
XX-34-01		
XX-35-01	XX-45-01	XX-55-01
XX-41-01	XX-62-01	XX-63-01
XX-31-59	XX-41-59	XX-51-59

(xiv) *Administration—Communications.* The common costs assigned to these accounts shall be apportioned on the ratio of amounts in the following accounts: XX-13-20, XX-16-20, XX-19-20 assigned to commuter service to the railroad's total in these accounts for the designated area.

(xv) *Casualties and Insurance*. The common costs assigned to *Other*. The common costs assigned to these accounts shall be apportioned, separated between running, switching and other, on the ratio of the amounts in all of the accounts under § 1127.7 (e/v1) assigned to commuter service (excluding accounts 12-11-00, 12-12-00, 12-13-00, 12-14-00, 12-15-00, 12-16-00, 12-17-00, 12-18-00, 12-19-00, all rental accounts, joint facility accounts and depreciation accounts) to the railroad's total in these accounts for the designated area.

(xvi) *Fringe Benefits*. Fringe benefits shall be separated between pensions and Health and Welfare benefits with a further separation between running, switching and other. The costs assigned to these accounts for pensions shall be the actual costs that are directly attributable to commuter service. Health and Welfare benefits shall be assigned to commuter service on the ratio of the commuter service amounts in the respective salary and wage accounts to the railroad's system total for these accounts. Expenses for entertainment facilities for personal use shall only be included in Health and Welfare benefit costs where it can be clearly demonstrated that the cost was commuter service related.

(2) *Equipment—Locomotives—(1) Repair and Maintenance; Equipment Damaged.* These accounts shall be separated between yard and other (road) with a further separation between diesel and other (electric). The common costs assigned to these accounts for yard locomotives shall be based on the results of the special study described in § 1127.7 (f)(3)(ix). The costs assigned to these accounts for other locomotives (road) shall be the actual costs that are directly attributable to commuter service.

(ii) *Administration; Machinery Repairs; Other Casualties and Insurance; Other.* The common costs assigned to these accounts shall be apportioned on

the ratio of the amounts assigned to commuter service to the railroad's total in the designated area for the following accounts:

XX-21-39	XX-24-39	XX-26-39
XX-21-41	XX-24-41	XX-26-41
XX-21-48	XX-24-48	XX-26-48
37-21-00	37-24-00	37-26-00
38-21-00	38-24-00	38-26-00

(III) *Fringe Benefits—Locomotives.* Fringe benefits shall be separated between pensions and Health and Welfare benefits with a further separation between running, switching and other. The costs assigned to these accounts for pensions shall be the actual costs that are directly attributable to commuter service. Health and Welfare benefits shall be assigned to commuter service on the ratio of the commuter service amounts in the respective salary and wage accounts to the railroad's system total for these accounts. Expenses for entertainment facilities for personal use shall only be included in Health and Welfare benefit costs where it can be clearly demonstrated that the cost was commuter service related.

Other Equipment—(iv) Work and Other Non-Revenue Equipment. The common costs assigned to these accounts shall be apportioned on the ratio of the commuter service amounts in the repair and maintenance running and switching accounts, identified in § 1127.7(r)(1)(viii) to the railroad's total for these accounts in the designated area.

(v) *Administration; Machinery; Other Casualties and Insurance.* The common costs assigned to these accounts shall be apportioned on the ratio of the amounts assigned to the railroad's total in the designated area for the following accounts:

XX-23-13
XX-23-14
XX-23-45
XX-23-46
XX-23-47
XX-23-48
XX-23-49
36-23-00
37-23-00
XX-23-38
XX-22-42

(vi) *Fringe Benefits—Other Equipment.* Fringe benefits shall be separated between pensions and Health and Welfare benefits with a further separation.

ration between running, switching and other. The costs assigned to these accounts for pensions shall be the actual costs that are directly attributable to commuter service. Health and Welfare benefits shall be assigned to commuter service on the ratio of the commuter service amounts in the respective salary and wage accounts to the railroad's system total for these accounts. Expenses for entertainment facilities for personal use shall only be included in Health and Welfare benefits costs where it can be clearly demonstrated that the cost was commuter service related.

(vii) *Other.* Equipment retirements shall be assigned to commuter service on an actual basis. The balance of the common costs assigned to these accounts shall be apportioned on the ratio of the amounts assigned to commuter service to the railroad's total in the designated area for the following accounts:

XX-23-43	XX-25-45	XX-27-45
XX-23-44	XX-25-46	XX-27-46
XX-23-45	XX-25-47	XX-27-47
XX-23-46	XX-25-48	XX-27-48
XX-23-47	XX-25-49	XX-27-49
XX-23-48	XX-25-50	XX-27-50
XX-23-49	XX-25-51	XX-27-51
XX-23-50	XX-25-52	XX-27-52
XX-23-51	XX-25-53	XX-27-53
XX-23-52	XX-25-54	XX-27-54
XX-23-53	XX-25-55	XX-27-55
XX-23-54	XX-25-56	XX-27-56
XX-23-55	XX-25-57	XX-27-57
XX-23-56	XX-25-58	XX-27-58
XX-23-57	XX-25-59	XX-27-59
XX-23-58	XX-25-60	XX-27-60
XX-23-59	XX-25-61	XX-27-61
XX-23-60	XX-25-62	XX-27-62
XX-23-61	XX-25-63	XX-27-63
XX-23-62	XX-25-64	XX-27-64
XX-23-63	XX-25-65	XX-27-65
XX-23-64	XX-25-66	XX-27-66
XX-23-65	XX-25-67	XX-27-67
XX-23-66	XX-25-68	XX-27-68
XX-23-67	XX-25-69	XX-27-69
XX-23-68	XX-25-70	XX-27-70
XX-23-69	XX-25-71	XX-27-71
XX-23-70	XX-25-72	XX-27-72
XX-23-71	XX-25-73	XX-27-73
XX-23-72	XX-25-74	XX-27-74
XX-23-73	XX-25-75	XX-27-75
XX-23-74	XX-25-76	XX-27-76
XX-23-75	XX-25-77	XX-27-77
XX-23-76	XX-25-78	XX-27-78
XX-23-77	XX-25-79	XX-27-79
XX-23-78	XX-25-80	XX-27-80
XX-23-79	XX-25-81	XX-27-81
XX-23-80	XX-25-82	XX-27-82
XX-23-81	XX-25-83	XX-27-83
XX-23-82	XX-25-84	XX-27-84
XX-23-83	XX-25-85	XX-27-85
XX-23-84	XX-25-86	XX-27-86
XX-23-85	XX-25-87	XX-27-87
XX-23-86	XX-25-88	XX-27-88
XX-23-87	XX-25-89	XX-27-89
XX-23-88	XX-25-90	XX-27-90
XX-23-89	XX-25-91	XX-27-91
XX-23-90	XX-25-92	XX-27-92
XX-23-91	XX-25-93	XX-27-93
XX-23-92	XX-25-94	XX-27-94
XX-23-93	XX-25-95	XX-27-95
XX-23-94	XX-25-96	XX-27-96
XX-23-95	XX-25-97	XX-27-97
XX-23-96	XX-25-98	XX-27-98
XX-23-97	XX-25-99	XX-27-99
XX-23-98	XX-26-00	XX-28-00
XX-23-99	XX-26-01	XX-28-01
XX-24-00	XX-26-02	XX-28-02
XX-24-01	XX-26-03	XX-28-03
XX-24-02	XX-26-04	XX-28-04
XX-24-03	XX-26-05	XX-28-05
XX-24-04	XX-26-06	XX-28-06
XX-24-05	XX-26-07	XX-28-07
XX-24-06	XX-26-08	XX-28-08
XX-24-07	XX-26-09	XX-28-09
XX-24-08	XX-26-10	XX-28-10
XX-24-09	XX-26-11	XX-28-11
XX-24-10	XX-26-12	XX-28-12
XX-24-11	XX-26-13	XX-28-13
XX-24-12	XX-26-14	XX-28-14
XX-24-13	XX-26-15	XX-28-15
XX-24-14	XX-26-16	XX-28-16
XX-24-15	XX-26-17	XX-28-17
XX-24-16	XX-26-18	XX-28-18
XX-24-17	XX-26-19	XX-28-19
XX-24-18	XX-26-20	XX-28-20
XX-24-19	XX-26-21	XX-28-21
XX-24-20	XX-26-22	XX-28-22
XX-24-21	XX-26-23	XX-28-23
XX-24-22	XX-26-24	XX-28-24
XX-24-23	XX-26-25	XX-28-25
XX-24-24	XX-26-26	XX-28-26
XX-24-25	XX-26-27	XX-28-27
XX-24-26	XX-26-28	XX-28-28
XX-24-27	XX-26-29	XX-28-29
XX-24-28	XX-26-30	XX-28-30
XX-24-29	XX-26-31	XX-28-31
XX-24-30	XX-26-32	XX-28-32
XX-24-31	XX-26-33	XX-28-33</

(3) *Transportation*—(i) *Engine Crews; Train Crews.* These accounts shall be separated between salary and wages and train supplies and expenses. The salary and wage portion shall be assigned to commuter service on an actual basis. The common costs assigned to these accounts for train supplies and expenses shall be apportioned on the ratio of commuter cars dispatched in the designated area to the railroad's total cars dispatched in the designated area. Commuter cars shall include passenger cars and motor cars.

(11) *Dispatching trains.* The common costs assigned to these accounts shall be apportioned on the ratio of the commuter train hours in the designated area to the total train hours in the designated area.

(iii) **Operating Signals and Interlocks; Operating Drawbridges; Highway Crossing Protection.** The common costs assigned to these accounts shall

be apportioned on the ratio of the number of commuter service train movements through these facilities to the total of all train movements through these facilities.

(iv) *Train Inspection and Lubrication.* The common costs assigned to these accounts shall be apportioned on the ratio of commuter cars dispatched in the designated area to the railroad's total cars dispatched in the designated area. Commuter cars shall include passenger cars and motor cars.

(v) *Electric Power Purchased/Produced for Motive Power.* The cost of kilowatt hours consumed for commuter service shall be based on the kilowatt hours developed for commuter service in § 1127.7(f)(1)(v) weighed to reflect the peak period power demands, i.e., time of day and volume of power demanded. A special study may be conducted to develop the peak power demand factor.

(vi) *Servicing Locomotives.* The common costs assigned to these accounts shall be apportioned on the ratio of the total locomotive units (road) serviced in commuter service in the designated area to the railroad's total locomotive units (road) serviced in the designated area.

(vii) *Freight Lost or Damaged—Solely Related; Clearing Wrecks; Other Casualties and Insurance.* The minority user shall be responsible for any costs incurred under these accounts resulting from the operation of the minority service. The dominant user is responsible only for those costs incurred under these accounts resulting from an incident that solely involves the operation of the dominant service. The railroad shall, if the subsidizer agrees, establish a reserve for the purpose of holding the subsidizer harmless from any liabilities under these accounts arising out of the operation of commuter services. Where the commuter service is the minority user, the costs assigned to these accounts for commuter service insurance shall be determined by ascertaining from the railroad's underwriters: (A) The difference in the current premium if commuter service were not operated and (B) the additional premium required to hold the railroad and the subsidizer harmless from any liability. Such

amounts shall be apportioned between the several commuter services operated by the railroad either on the basis of the relative passenger-miles (including pass riders) or on the basis of the relative passenger revenues (including pass rider allowances). Where the commuter service is the dominant user, the costs assigned to these accounts for commuter service insurance shall be determined by ascertaining from the railroad's underwriters the premium if the commuter service were operated as the sole user of the properties involved.

(viii) *Fringe Benefits.* Fringe benefits shall be separated between pensions and Health and Welfare benefits with a further separation between running, switching and other. The costs assigned to these accounts for pensions shall be the actual costs that are directly attributable to commuter service. Health and Welfare benefits shall be assigned to commuter service on the ratio of the commuter service amounts in the respective salary and wage accounts to the railroad's system total for these accounts. Expenses for entertainment facility for personal use shall only be included in Health and Welfare benefit costs where it can be clearly demonstrated that the cost was commuter service related.

(ix) *Switch Crews; Controlling Operations; Yard and Terminal Clerical; Operating Switches, Signals, Retainers, and Humps; Locomotive Fuel; Electric Power Purchased/Produced for Motive Power; Servicing Locomotives.* A special study shall be conducted to determine the ratio of the commuter service (diesel, electric) yard locomotive unit hours in the designated area to the railroad's total (diesel, electric) yard locomotive unit hours in the designated area. The common costs assigned to these accounts shall be the amounts in the railroad's accounts for the designated area multiplied by the ratio determined from the study. For this purpose, the term "locomotive" shall include motor cars. In conducting such a study, the railroad should recognize the variances of: (A) Weekend versus weekday demand; (B) required yard crew manning to perform the switching services for various

users; and (C) the effect of peak service on yard manning.

(x) *Employees Performing Clerical and Accounting Functions; Communication System Operations.* (A) The common costs assigned to these accounts, exclusive of material, shall be subdivided into 4 categories: (1) Ticket sales and service; (2) other station costs; (3) station master; and (4) mail and baggage.

(B) The common costs in these subaccounts, exclusive of material, shall be apportioned on the ratio of commuter service units in the designated area to the total units in the designated area for the respective units: (1) Weighted ticket sales; (2) passenger on-off count (including pass riders); (3) trains stopping at stations in the designated area; and (4) units of mail and baggage handled. The common material costs assigned to these accounts shall be apportioned on the ratio of the commuter service amounts in these accounts exclusive of material determined above to the railroad's total for these accounts in the designated area.

(xi) *Administration.* The common costs assigned to these accounts shall be apportioned on the ratio of the commuter service amounts in all other transportation accounts in each subcategory except Fringe Benefits and Communication Systems Operations to the railroad's total for these accounts (including the applicable freight accounts) in the designated area.

(xii) *Communication System Operations.* The common costs assigned to these accounts shall be apportioned on the ratio of the total commuter service amounts in the Administration accounts section (§ 1127.7(f)(3)(xi)) assigned to commuter service to the railroad's total for these accounts (including the applicable freight accounts) in the designated area.

(4) *General and Administrative—Fringe Benefits.* Fringe benefits shall be separated between pensions and Health and Welfare benefits with a further separation between running, switching and other. The costs assigned to these accounts for pensions shall be the actual costs that are directly attributable to commuter serv-

ice. Health and Welfare benefits shall be assigned to commuter service on the ratio of the commuter service amounts in the respective salary and wage accounts to the railroad's system total for these accounts. Expenses for entertainment facilities for personal use shall only be included in Health and Welfare benefit costs where it can be clearly demonstrated that the cost was commuter service related.

(g) *Performance Standards—Penalties and Incentives.* The subsidy agreements may include reasonable provisions as agreed by the parties for penalties for service inferior to stipulated performance standards and incentive payments for superior performance. Penalties withheld from subsidy payments by the subsidizer under such agreements shall be treated as reductions of avoidable costs and incentive payments shall be treated as additions to avoidable costs.

(43 FR 16411, Mar. 9, 1978, as amended at 45 FR 45, Jan. 2, 1980; 45 FR 20107, Mar. 27, 1980)

§ 1127.8 Valuation of rail properties.

The value of rail properties on which a reasonable return is allowed shall consist of:

(a) The net book value of equipment furnished by the contracting carrier for commuter service, after deduction of accrued depreciation; and

(b) The value of rail properties on which a reasonable return is allowed when the commuter service is the minority user shall consist of the net book value of those roadway and structures properties which are used in commuter service and could be disposed of if the commuter service were discontinued. The net book value shall include the net liquidation value of the properties as of April 1, 1976, determined for their highest and best use for other than rail transportation purposes, plus the value of additions and betterments completed after that date for commuter service. From this amount is subtracted any depreciation accrued from that date and all costs of modifying remaining properties so that non-commuter operations can be continued over them. It shall not include the value of properties owned by

public bodies; or of properties owned by the trustees of debtor estates if such properties are entitled to a return computed under 49 CFR 1125.9;

(c) When the commuter service is the dominant user, it shall be entitled to a return on the values of properties and equipment which could be disposed of if the minority service(s) were discontinued. The value applied to each line segment shall be the acquisition price paid by the commuter authority to Conrail, plus the value of additions and betterments after acquisition for the minority service, less depreciation accrued from the time of acquisition. From this amount is subtracted all costs of modifying remaining properties so that commuter operations can be continued over them.

(d) If the book values of road or equipment property are adjusted upward or downward as a result of final orders of the special court, such adjusted values shall be reflected in future subsidy payments, but without retroactive effect.

(45 FR 47, Jan. 2, 1980)

§ 1127.9 Reasonable return on the value of the properties.

The reasonable return shall be 7.5 percent per annum on the sum of the appropriate elements of the investment base computed in accordance with § 1127.8. When the commuter authority is the owner, the 7.5 percent per annum return represents a charge to the other user(s).

(45 FR 47, Jan. 2, 1980)

§ 1127.10 Additional rail passenger service.

(a) As used in this section, the term "additional rail passenger service" means rail passenger service other than rail passenger service provided pursuant to sections 304(e) (2) and (4) of the 3R Act, as amended. It includes extended or expanded service and modified routings, which is to be provided over rail properties conveyed to Conrail pursuant to Section 303(b)(1) of the 3R Act, as amended, or over rail properties contiguous to properties conveyed to Amtrak, or any other rail properties contiguous to properties to which a State (or local or regional

transportation authority) has obtained access.

(b) If a State (or a local or regional transportation authority in the region offers to provide payment for the provision of additional rail passenger service, Conrail shall undertake to provide the additional service consistent with the discontinuance provisions contained in section 304(e)(2) of the 3R Act, as amended.

(c) An offer to provide payment for the provision of additional rail service shall be made in accordance with section 304(c)(2)(A) of the 3R Act, as amended, and pursuant to § 1127.6-1127.9 of these regulations. The offer shall be designed to avoid any additional costs to Conrail arising from the construction or modification of capital facilities or from any additional operating delays or costs arising from the absence of such construction or modification.

(d) The State (or local or regional transportation authority) shall demonstrate that it has acquired, leased, or otherwise obtained access to all rail properties other than those designated for conveyance to Amtrak pursuant to section 206(c)(1)(C) and 206(c)(1)(D) of the 3R Act, as amended, and to Conrail pursuant to section 303(b)(1) of the 3R Act, as amended, necessary to provide the additional rail passenger service. The State shall also demonstrate that it has completed or will complete prior to the inception of the additional rail passenger service, all capital improvements necessary to avoid significant costs which cannot be avoided by improved scheduling or other means on other existing rail service, including rail freight service. Assurance is required that the additional service will not detract from the level and quality of existing rail passenger and freight service.

(e) Conrail shall not be required to operate additional rail passenger service over rail properties leased or acquired from or owned or leased by a profitable railroad in the region.

APPENDIX I—SUBSIDY ESTIMATE.

The following information is required to be furnished under § 1127.3(b) in accordance

with the methodology set forth in §§ 1127.3 through 1127.9. The base period data shall be shown for each item.

REVENUES ATTRIBUTABLE FOR BASE PERIOD

1. Passenger
2. All Other
3. Total Revenues Attributable (lines 1 plus 2)

AVOIDABLE COSTS FOR

4. Maintenance of Way and Structures
5. Maintenance of Equipment
6. Transportation
7. General and Administrative
8. Casualty Reserve Account
9. Performance Standards
10. Total Avoidable Costs (lines 4 through 9)

RETURN ON VALUE FOR

11. Valuation of Property (lines 11a plus 11b)
 - a. Book Value of Equipment
 - b. Book Value of Roadway and Structures
 12. Rate of Return
 13. Total Return on value (line 11 times line 12)

ESTIMATED SUBSIDY PAYMENT

14. Subsidy Estimate (line 3 minus lines 10 and 13)
15. Financial Assistance from Subsidizer
16. Estimated Emergency Operating Assistance from the Secretary (line 14 minus line 15)

TRAFFIC AND OPERATING DATA

1. Numbers of Passengers Carried
2. Total Car Miles

APPENDIX II—FINANCIAL STATUS REPORT

A railroad entering into a subsidy agreement shall compile the information prescribed below in accordance with the standards set forth in §§ 1127.3 through 1127.9.

$$SFCT = Y(.670 + .910 N) + N \left[1.860 + .870 \sqrt{CT} + .058 CTF + .029 CIP + .068 J} \right]$$

$$\left[\frac{CTF}{600} (1 + \frac{VF}{VF}) + \frac{CTP}{6000} (1 + \frac{VF}{VF}) + \frac{(VF)}{750} (1 + \frac{VF}{VF}) \right]$$

or in cases where freight speeds are equal to or greater than 80 percent of passenger speeds, the freight and passenger terms may be combined as shown below.

$$SFCT = Y(.670 + .910 N) + N \left[1.860 + .870 \sqrt{CT} + .058 CTF + .029 CIP + .068 J} \right]$$

$$\left[CT \left(1 + \frac{V}{600} + \frac{V^2}{6000} \right) \right]$$

REVENUES ATTRIBUTABLE FOR ACTUAL AND PROJECTED

1. Passenger
2. All Other
3. Total Revenues Attributable (lines 1 plus 2)

AVOIDABLE COSTS FOR

4. Maintenance of Way and Structures
5. Maintenance of Equipment
6. Transportation
7. General and Administrative
8. Casualty Reserve Account
9. Performance Standards
10. Total Avoidable Costs (lines 4 through 9)

RETURN ON VALUE FOR

11. Valuation of Property (lines 11a plus 11b)
 - a. Book Value of Equipment
 - b. Book Value of Roadway and Structures
 12. Rate of Return
 13. Total Return on Value (line 11 times line 12)

SUBSIDY PAYMENT

14. Subsidy Payment (line 3 minus lines 10 and 13)
15. Financial Assistance from Subsidizer
16. Emergency Operating Assistance from the Secretary (line 14 minus 15)

TRAFFIC AND OPERATING DATA

1. Number of Passengers Carried
2. Total Car Miles

APPENDIX III—SPEED FACTORED GROSS TONS FORMULA (SFCT)

The following formula is required to calculate the SFCT to be used under § 1127.7(f)(1)(B) of this part.

All Track and Roadbed Maintenance:

(44 FR 16411, Mar. 19, 1979, as amended at 45 FR 47, Jan. 2, 1980)

Cross Reference: See also Rule 247 of the Special Rules of Practice (§ 1100.247 of this chapter).

where:
GT = Total gross tons of traffic (in millions) per track mile per year.
OTF = Freight traffic gross tons (in millions) per track mile per year.
OTP = Passenger traffic gross tons (in millions) per track mile per year.
N = Number of tracks per route mile.¹
V = Speed factor (the larger of freight speed or 0.8 times passenger speed).
VF = Freight speed.
VP = Passenger speed.
J = 1 for welded rail.
1.6 for bolted rail.

[V—As shown below]

FRA class of track and type of operation	Value of V		
	Main line	Branch line	Yard and switch
Class 1, 2, 3; freight only up to 10 MT per mile per year.....	1.00	0.50	0.14
Class 1, 3; passenger, or Class 1, 2, 3; freight more than 10 MT per mile per year.....	1.12	0.50
Class 3; passenger, or Class 4, 5, 6; all traffic.....	1.15	0.60

¹In calculating total SFQT, the value of N shall reflect the total number of tracks presently in place. Any tracks constituting present excess capacity shall be included in this value of N.

Where the commuter authority is the minority user the value of N, used in a calculating SFQT for freight and/or intercity passenger service, shall reflect the total number of tracks less the number of tracks (if any) which could be eliminated if commuter service were discontinued. Any tracks constituting present excess capacity shall be included in the value of N when computing SFQT for freight and/or intercity passenger.

Where the commuter authority is the dominant user, the value of N shall reflect the total number of tracks less the number of tracks (if any) which could be eliminated if freight and/or intercity passenger service were discontinued. Any track's constituting present excess capacity shall be included in the value of N when computing SFQT for commuter service.

The speed factors used shall be governed by the highest authorized speed in the designated area for the respective type of service.

Special studies may be conducted from time to time to update the constants used in the formula.

APPENDIX D
REPORT OF NEW TECHNOLOGY

REPORT OF NEW TECHNOLOGY

A thorough review of the work performed under this contract has revealed no significant innovations, discoveries, or inventions at this time. In addition, all methodologies employed are available in the open literature. However, the findings in this document do represent new information and should prove useful throughout the United States in designing and evaluating future transportation demonstrations, in general, and commuter rail service in particular.

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